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EDITORIAL NOTES.

Probably the most remarkable gathering of medical men in the history of this country occurred in Chicago in the first week of June; it was the Fifty-ninth Annual Meeting of the American Medical Association. By nine o'clock on Monday morning, June 1st, the registration hall was crowded and it was evident to one with half an eye that all previous records of attendance would be broken. And this assumption was well within the fact, for no less than 6447 members registered during the session, and doubtless there were several hundred who came but did not register; there are always some in this class. The House of Delegates began its work promptly on Monday morning and conducted a maximum amount of business in a minimum amount of time; there were no hitches and no squabbles, and when any matter came to a final vote, in almost every instance the vote was unanimous. A resume of the work of the house will be found on another page and it will be seen that measures of great importance were passed upon. The two great undertakings of the Association—the Council on Pharmacy and Chemistry and the Council on Medical

Education—were heartily and enthusiastically supported and ample funds provided for their continued activity. By unanimous vote, Dr. J. N. McCormack was requested to continue in charge of the work of organization and public education in matters medical, and he unwillingly consented to do so. No man in our profession has done more arduous work during the past six years, or at greater personal sacrifice, for the benefit of physicians, than has Dr. McCormack. Only eight delegates from the various state associations failed to register in the House of Delegates; and, we are ashamed to confess the fact, California was one of the eight states so lacking. But two of our three delegates were in attendance. This is not as it should be and the House of Delegates of our State Society, at its next meeting, should see to it that members are elected who can and will fulfil the obligations which they assume when they consent to become delegates. The work of the Association is far too important to every physician in the land to be in the slightest degree neglected. Let us think this matter over carefully and choose deliberately, at our next meeting, such delegates as we may be sure will be in attendance and will represent our state. It is true that to be a delegate means to work; but the work is not as hard as it was a few years ago, and the house manages to perform its labors in much less time than formerly, thus giving delegates some time to devote to their section work.

Dr. Burrell, the President, made an ideal presiding officer and conserved the time of the house very materially. His rulings were uniformly just and made promptly; and, withal, with due courtesy. Atlantic City was chosen as the place for the next meeting, the time to be set by the Trustees, depending upon the dates which are available, though probably about the third week in June, 1909. Dr. William C. Gorgas, Colonel, U. S. A., was elected President-elect and will be installed at the next meeting. Certainly the Association honored itself no less than Colonel Gorgas in electing for its president one who has written his name so high upon the roster of American physicians. First Vice-President, Dr. Thomas Jefferson Murray, Butte, Montana; Second Vice-President, Dr. John A. Hatchett, El Reno, Oklahoma; Third Vice-President, Dr. Thomas A. Woodruff, Chicago; Fourth Vice-President, Dr. E. N. Hall, Woodbury, Kentucky; Secretary, Dr. George H. Simmons; Treasurer, Dr. Frank Billings; Trustees (term expires 1911), Dr. Wisner R. Townsend, New York; Dr. Philip Mills Jones, San Francisco, and Dr. William T. Sarles, Sparta, Wisconsin. The Trustees whose terms have not expired are as follows: Expire 1909—Drs. William H. Welch, Miles F. Porter, M. L. Harris. Expire 1910—Drs. T. J. Happell, W. W. Grant and Philip Marvel.

THE NEW OFFICERS.

Some time this fall (the exact date has not been set, but it will probably be in September) there is

COUNTY OFFICERS.

to be held a meeting of the Presidents and Secretaries of County Medical Societies with the officers of the State Society.

The date and place will be announced later. This meeting is for the purpose of bringing together those who are closely in touch with organization work all over the state, to the end that we may come to a better understanding of conditions in the various counties, and study how to increase and improve the body upon which all medical organization is founded—the County Medical Society. With the numerous undertakings that are pressing upon us as medical men—state sanitation, preventive medicine, the education of the public, the nostrum fight, proper conception of sanitary legislation, etc.—it becomes imperative that we more closely weld the units of our profession into a solid instrument for the good of the people in our charge. We therefore ask every officer of every County Medical Society to take this matter to heart *now*, remember that the meeting is to be held, and endeavor so to arrange his affairs that he will not be prevented from attending. It will be one of the most important medical meetings ever held in this state, and it should be fully attended. Do not let any trivial thing keep you away, but come even if at the expense of some time and money. Those County Medical Societies that can afford it should pay the expenses of their officers. Remember that our organization stands for betterment; for educating the public in the matter of proper support of our profession, to the end that the people may be the better served and by medical men who are able to keep abreast of medical progress—which they can not do if insufficiently supported. Everything that makes for better physicians, better supported physicians, is by that much a direct benefit to the public. Keep this meeting in mind and do not fail to attend it.

One of the very valuable departments of the *Journal A. M. A.* is that of Therapeutics. Often we feel keen regret that lack of

A VALUABLE DEPARTMENT.

space prevents us from reprinting the articles in this department in their entirety—anything else would be unsatisfactory. The conditions governing therapeutic requirements are so clearly and concisely—so sanely—put, that they must be of value to every reader. And not the least valuable feature of this most excellent work is the fact that no prescription is given that can not be easily compounded by any competent pharmacist. It is refreshing to see something of the old-time common sense use of drugs, rather than this twentieth century haste to make use of the last thing mentioned by the last drummer who came into the office with his routine,

learned-by-heart-from-the-manufacturer song about the wonderful and utterly impossible things which his stuff will do. Painstaking, faithful and accurate work is back of these articles, and the author is indeed to be congratulated upon them. May we hope that the *Journal A. M. A.* will, in due course of time, reproduce these contributions in book form so that they may be placed in the hands of physicians at a moderate cost?

Once more has the House of Delegates of the American Medical Association gone on record as

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unanimously endorsing the Council on Pharmacy and Chemistry and as asking the official journals of state medical organizations to refuse advertising space to preparations not approved by the Council. This is a perfectly natural and reasonable request. The Association as a whole may well request its component parts to do individually no less than their own representatives do collectively when assembled and acting for them. Why should these representatives be made to suffer the humility of seeing their respective state organizations act in a manner contrary to the policy which they have all (and unanimously) endorsed collectively? Why, for instance, should the large and influential delegation from the great Empire state be compelled to suffer the indignity of seeing the journal of their State Society publish, simply because of the few dirty dollars, the advertisements of preparations whose fraudulent character has been exposed by the Council on Pharmacy and Chemistry in the pages of the *Journal A. M. A.*? It seems, to put it very mildly, most inconsistent. If a thing is right it is right, and just as right today as it will be one year from now—or ten. The Council has unmasked the lies of certain manufacturers and the House of Delegates has said that it is not right to continue to promote the use of such things or to advertise them to self-respecting medical men. Then why should supposedly self-respecting medical men, collectively representing a state medical organization, continue to secure tribute from such unmasked frauds? It certainly seems queer. And the Associated Physicians of Long Island are in this same queer fix; apparently they would rather have some few dollars derived from fraud than retain their self-respect. We do not mention New York and Long Island because they are the only offenders; there are others. These are referred to because they are the biggest offenders and there seems the least reason for their doing these things. Surely the New York State Medical Society is large enough and rich enough to worry along without the comparatively small sum which it derives from fraud through the pages of its official journal. And are the Associated Physicians of Long Island so nearly approaching objects of charity that they must also needs participate in this form of despicable graft? It is indeed a sad spectacle. Perhaps they will in time appreciate their peculiarly anomalous position, and reform. Let us continue to hope.

For some weeks the work of compiling the new edition of the Register and Directory has occupied the attention of our office. It is hoped that the volume may be ready for distribution about the latter part of July or the middle of August, though the actual date is as yet uncertain. During the past year a spirit of maddening unrest seems to have pervaded the whole medical profession of the state, and the number of changes of address is something wonderful and fearful. Changes are coming, literally, by the hundred, and our meager clerical force has been swamped for days at a time, checking them up. It must necessarily be, therefore, that many changes will come in at the last minute or when the book is on the press and so too late to be made. It is always so. Please, please, good sir, be patient if you see yourself in the new edition with an old address; and remember that there is just a possibility that you did not think to send us your change of address. We do the best we can at mind reading, projection of the astral body, manipulation of the kama (?), and other esoteric things—not to speak of making use of county society secretaries, telephone books, etc., etc., but even so we sometimes fail to note a change of address that has not been sent to us. Furthermore, human nature is still frail and fallible, and mistakes will occasionally occur in spite of the fact that the work is checked no less than three times before being uttered. Kind friend, bear these things in mind and be humanly charitable.

In this issue we begin the publication of a most valuable contribution to the literature of Plague.

ARTICLE ON PLAGUE. Dr. W. C. Rucker, U. S. P. H. & M. H. S., has kindly translated for the JOURNAL, at no little personal sacrifice of time and trouble, an article by Le Dantec, which translation makes far and away the most comprehensive contribution to the subject that has yet appeared in English. There are no less than three distinct foci of plague on the Pacific Coast: San Francisco, the Bay Counties and Seattle. How long they will remain plague foci, no one can even guess; but that they will so remain for a period of time longer than it is pleasant to contemplate, no one at all conversant with the disease and its history will for a moment doubt. Of course there will be a few with minds (?) ossified or atrophied by years of disuse, or congenitally lacking intellect, or with an early acquired longing for the limelight of lay publicity, who will break forth into fulminations (mostly in lay publications) on the subject and write themselves asses by denying that plague exists or ever did exist in this portion of the globe. But this infinitesimally small element will not, in the long run, have any effect upon the final result. It seems highly desirable that every physician on this coast should have in his possession a complete history of

the disease, together with a clear picture of its forms, clinical manifestations and pathology. All this the article by Le Dantec gives, and with the exception of the very latest work of the Indian Plague Commission, it is complete. We, therefore, commend it to your careful attention.

A certain number of physicians seem still to be in doubt as to the actual value of the work of the Council on Pharmacy and Chemistry. Fortunately, this **A SIMPLE ILLUSTRATION.** number is not large and is growing smaller; however, there will always be some who, for reasons best known to every one else and denied by themselves, will revile the Council and anathematize its work. The Council's work may be said to be along two distinct lines: (1) determining the truth as to formula of composition and (2) correcting statements of manufacturers as to the value or the effects of individual preparations. A notable example of the valuable work of the Council along the latter line of activity was furnished, recently, in the *Journal A. M. A.*, in an article dealing with the diastasic ferments. One preparation put out by a prominent manufacturer bore upon its label the statement that it would convert one hundred and fifty times its weight of starch; as a matter of cold fact, it could convert fifteen times its weight of starch. A more recent example of the value of the work of the Council is found in the *Journal A. M. A.* for June 13th. Two preparations put out by a German firm of manufacturing chemists and for a long time claimed to be definite, synthetic chemical substances, have been found to be merely mechanical mixtures; we refer to arhovin and pyrenol. Certain of the nostrum-subsidized medical (?) press, whose editors look with alleged holy horror upon the work of the Council, have made the false claim that the Council basely discriminated against American manufacturers and in favor of the German brand. The present expose is, in consequence, very timely, though its application will of course be ignored or denied by the before-referred-to editors of medical (?) journals whose first duty is to the nostrum maker (this term, if translated into plain English, would read "money payer"). The last paragraph of the article referred to is really too choice to omit:

"The firm that makes pyrenol, the *Ghemisches Institut*, Dr. A. Horowitz, Berlin, also makes iodofan, the composition of which was recently shown to differ vastly from the advertised claims. It also puts out visvit, a nostrum which has been exploited by means of clinical histories rehashed from write-ups of other preparations. All of which goes to show that pharmaceutical literary fiction is not confined to the United States, but that German enterprise in this, as in other lines, is encroaching on a highly specialized field. Simple patriotism, however, would seem to dictate that if we must be humbugged let it at least be by home talent."

Tennessee has joined the family of state organizations which publish a journal, and under date of

June appears the first number of
NEW STATE JOURNALS. *The Journal of the Tennessee State Medical Association.* It is

in every way a clean, dignified, well published periodical, and is under the able editorial management of Dr. George H. Price, Nashville. We are advised that from this, its beginning, it is to follow the only safe policy and accept for advertising only such preparations as have been approved by the Council on Pharmacy and Chemistry. We most assuredly extend to this youngest of the family every good wish for long life, sturdy good health and a valuable career. A couple of years or so ago, the state organization of Maryland had the journal matter under consideration but, unfortunately, instead of starting their own journal, they made the *Maryland Medical Journal* the official publication of the Medical and Chirurgical Faculty of Maryland (which is the name of the state medical organization). The word "unfortunately" is used advisedly, for this publication has always been close up in the front rank of the "published-for-profit" class of medical (?) journals. We imagine it must be a good deal of a shock to some of the physicians of Maryland, for instance, some of the members of Johns Hopkins, to see, in the pages of the official journal of their "Faculty," advertisements of such things as glycozone, cypridol, Gray's tonic, ergoapiol, Hagge's codliver oil (nit), tongaline, papine, eusoma, bovine, seng, cactina, antiphlogistine, passiflora, chionia, Peacock's bromides, Fellow's syrup, glycothymoline, peptomangan, viburnum compound, fig syrup, resinol, salhepatica, etc. About the only nostrum we miss is antikamnia. And still, with this truly wonderful list of notorious nostrums to its credit, the editor has the nerve to say:

"As to the character of the Journal's advertising matter, we are pleased to affirm that it is of a high order, as conceded by its contemporaries and competent judges in general.

* * * That the advertising pages of the Journal are clean, consistent and commendable will best be seen by invidious comparisons with others of its class."

Now, it takes real nerve to make a statement like that, and whatever the editor may be, he is certainly entitled to consideration for his monumental nerve! The qualifying word is there, however. It probably is no worse than others "of its class"; but, good Lord, what a class! No wonder the Maryland "Faculty" has decided to publish a medical journal of its own and thus divorce decent medicine from predatory nostrum fraud. The only wonder is that the respectable element in the medical profession of Maryland has been able to tolerate the unholy alliance for so long.

ACUTE OTITIS MEDIA IN INFANCY AND CHILDHOOD.*

By H. BERT ELLIS, M. D., Los Angeles.

Diseases of children have been and still are neglected to a great extent; more neglected than any other branch of the practice of medicine. This is largely due to the fact that diagnosis is particularly difficult, the infant being unable, through lack of language, to give any idea of the physical symptoms; and the young child too imaginative to correctly express the condition.

In infants, it is not easy to diagnose otitis media; not only are the parts very small, but the external meatus is apt to be filled with epidermis scales. In dead nurslings, purulent inflammation of the ear is found at autopsies in four-fifths of the cases; this form of trouble is usually latent, and in other cases suggested by restlessness and tossing of the head. This concomitant otitis differs quite sharply from the ordinary form, which has much more pronounced symptoms, the most prominent of which is pain, but in the most destructive lesions of scarlet fever, pain is sometimes conspicuously absent, or at least not complained of by the apathetic child; this latter fact is of great importance and must not be lost sight of by the general practitioner. On the other hand, severe symptoms simulating brain lesions, stupor or convulsions, may arise in simple otitis and these be immediately relieved by paracentesis; hence there is a need of examination of the ears in all such cases, for the little patients thus affected cannot tell of their earaches.

At birth the interior and exterior walls of the external meatus and the membrana tympani are in simple coaptation and the irregularities filled with desquamated epithelium, the canal opens in a few days, forming an hour-glass canal (smaller at the inner end), the axis of the meatus being directed upward, causes the downward pulling of the auricle to inspect the membrane, which together with the cavity is about as extensive in the child as in the adult. A sieve-like bone separates the floor of the tympanum from the carotid canal and the jugular fossa. "The oblique position of the meatus and the thin plate of bone allow a puncture of the jugular bulb during paracentesis."

"The greater resistance of the drum membrane in the young (the external cutis layer being often thicker than in the adult), the median connective tissue membrane very solid and the inner mucous membrane and its pavement epithelium at least as normal as in advanced age, contribute to the comparative infrequency of perforations." (Jacobi Otitis Media in Children. *Archives of Otology*, April, 1905.)

The relative infrequency of spontaneous perforation and the anatomical difficulty of drainage, make the purulent secretion in the tympanum seek other methods of escape. At birth, the temporal bone is loosely connected with the cranial bones, is vascu-

*Read before the Thirty-Eighth Annual Meeting of the State Society, Coronado, April, 1908.

lar and traversed by many foramina containing blood vessels. The outer walls are more spongy than the tegman, and hence the readiness of post aural abscesses in infancy.

Owing to the influence of gravitation and the fact that the young periosteum and the numerous foramina are readily dissected the direction of least resistance is usually outward,

(a) upward and outward through the Rivinian fissure in the antral roof and backward between the bone and periosteum to form abscesses behind and above the ear;

(b) through cartilaginous fissures, involving posterior auricular glands, displacing the auricle outward and forward in the characteristic way;

(c) through the imperfectly closed roofs or the communicating blood vessels and lymph channels, directly to the middle fossa, setting up a meningitis or subdural or brain abscess;

(d) from the same sources, jugular thrombosis. In the very young, because the sinus is a flat affair, it is not involved, but in older children, through carious softening or through the medium of intercommunicating structures there may be thrombosis of the lateral sinus.

(e) The process may be extended by way of the posterior surface to the cerebellum.

These pathological processes being so numerous, serious and likely to occur, there is a sharp demand for early, prompt, and if possible, prophylactic treatment. Immediate adenectomy on involvement, careful and extensive incision of the drum, are the early procedures.

Another important fact is that the lymphatics are nine times more permeable in infancy than in the adult.

The differences between the adult and infant eustachian tubes are briefly as follows:

1. The tube is much shorter at birth, less than one-half as long (15 mm. to 38 mm.).

2. The orifice and calibre are nearly as great as in the adult, hence proportionately much wider.

3. The child's tube is straight, having no angle at the isthmus.

4. The tube is nearly horizontal; in the adult, the pharyngeal end is 12 to 14 mm. lower.

5. The mouth of the tube in the pharynx is, in a child at term, on a level or slightly below the plane of the hard palate. All these conditions favor the entrance of germs into the middle ear through the tube from the inspired air and nasal secretions.

The presence of vascular lymphoid tissue at the door of this open pathway (often itself infected) renders otitic infection quite a common thing.

Kerrison (*Laryngoscopic*, Sept., '07) states that acute tympanic inflammation calls for adenectomy, for the following reasons:

1. The operation for adenectomy involves some risk to healthy ears. It seems wiser, therefore, to operate during the acute stage, when the ears can be safeguarded by a free incision of the drum membrane.

2. The abstraction of blood relieves tubal congestion and favors resolution.

3. With a growth sufficiently large to produce congestion of the pharynx, recovery from acute tympanic disease is apt to be slow.

4. Some cases will not recover until adenoid tissue is removed.

On account of the low level of the pharyngeal orifice, Preysing denies the easy exit of pus from the ear to the pharynx. He claims that the pus, which is mostly thick, "would rather, while the infant is on its back, run into the mastoid antrum than through the tube."

Nearly all earaches in children under ten years of age, and the periodical earaches which occur in the night time, lasting for a few hours and recurring for a few hours for several days, are due to adenoid congestion. Indeed, this condition is the cause of febrile attacks more frequently than any other disease of infancy save the exanthemata.

"Otitis media is of frequent occurrence in the very young. It may combine with the retrograde involution of the embryonal myxomatous tissue, which may disappear soon after birth, but often persists in the antrum and tympanic cavity and undergoes purulent softening." (Jacobi, *Otitis Media in Children. Archives of Otology*, April, 1905.)

Microbes get into the middle ear in the contiguity of the surface of the mucous membrane quite frequently, or are thrown in during coughing, vomiting, or sneezing (or especially blowing the nose); nurslings are in danger during suckling and deglutition. Medicinal and other injections into the nose are sometimes the cause of infection, more especially the snuffing up of solutions or powders.

In severe otitis media, scarlet fever leads (10%). Cerebro-spinal meningitis, the infection coming from within, produces hopeless deafness and staggering. Measles, diphtheria, influenza, pneumonia, enteritis, smallpox are all diseases which may produce an otitis media.

Pain, dull to sharp, continuous or intermittent, sometimes with moaning, more often with a sharp cry, restlessness, pulling of the hair, burrowing of the head in the pillow, fever, sometimes stupor or convulsions are seen in the very young. Older children complain, the same as adults, of a feeling of fullness, tinnitus and deafness. There may be also tenderness of the ear on manipulation.

The principal thing, however, is the recognition of adenoids and their removal prior to infection, and no age is too young. In not a few instances I have operated upon infants a month old. All babes that have difficulty in nursing and breathing should be examined by the specialist, and if adenoids are enlarged, they should be immediately removed. Tonsils, at this age, should not be operated upon.

The symptomatology of adenoids in infancy differs considerably from that of childhood, but it is still fairly characteristic. However, the evil results

in infancy are even worse than they are in childhood.

There seems to be a prejudice in the profession, and among the specialists, to a certain extent, against the removal of adenoids in infancy, because of their likelihood of recurrence, but this should be of little weight, for if it be true, the infant is the gainer during the period of their absence. Their removal in infancy is accompanied by slight danger, and their removal in childhood is no more serious, so that we cannot be justified in allowing infants afflicted with enlarged adenoids to have their development seriously or irreparably interfered with, when a simple operation, practically unattended by danger, will certainly to a great extent relieve them of these conditions.

The nose of the infant is relatively small and the respiratory space very small. The nasopharynx is low, but deep from in front backwards, being almost as deep as in the adult. The height increases rather rapidly for six months, and then slowly up to two years. The nasopharynx is extremely vascular in infancy and the lymphoid ring is well developed.

Because of the low condition of the superior pharynx and post nasal opening, a relatively small enlargement of the normal adenoid tissue may cause a marked obstruction to nasal respiration. In infancy, this is a very serious matter, especially when it is anywhere near complete. Interference with nasal respiration necessitates oral respiration, which the young infant performs very imperfectly when asleep. This interference results in constant deprivation of a sufficient supply of oxygen, which in turn, produces a disturbance of nutrition, which is uninfluenced by any other method of feeding or mode of life.

Another serious result of nasal obstruction is the interference with suckling and sometimes with swallowing. The effort of suckling is so great that these babies take only enough food to satisfy the acute pangs of hunger, which again interferes with their nutrition and development. The difficulty of breathing makes them restless at night and interrupts their sleep, another disturbance to nutrition.

Snuffles in infancy is almost as diagnostic of enlarged adenoids as it is in childhood, and adenoids are almost always found in babies who suffer from frequent or continuous colds in the head. Irritating coughs, especially those occurring at night, without physical sign, are usually the result of adenoids.

Adenoids frequently accompany and probably cause catarrhal laryngitis and spasmodic croup. I say 'probably, because their removal so frequently relieves these symptoms.

An infant who is restless and sleepless at night should, if definite cause for same be not evident, be examined for hypertrophied adenoids.

Adenoids frequently cause enlargement of the cervical lymph glands, and they are without doubt the greatest factor in the production of acute otitis media, consequently should be removed as a prophylactic measure.

THE INDICATIONS FOR THE MASTOID OPERATION.*

By HILL HASTINGS, M. D., Los Angeles.

The subject of middle ear and mastoid suppuration has been discussed time and again in the meetings of ear, nose and throat societies. It is a subject of such vital importance that the chairman of this section and the program committee are to be commended for bringing it up for consideration at this general meeting of our State Society. The part of the subject assigned to me—The Indications for the Mastoid Operation—is, I take it, to present for discussion the chief signs and symptoms that have been accepted by otologists in the last few years as indications for immediate operation.

In the beginning it must be admitted that some mastoid operations are done where recoveries would likely have resulted without operation. On the other hand it must, with equal fairness, be admitted that in some cases death resulted through unwarrantable delay in operating. It should be stated also that seldom are the mastoid symptoms so severe that the patient would seek operation until serious, if not fatal, complications had arisen. It is not within the province of this paper to discuss these complications.

In every case of middle ear suppuration, the mastoid antrum, being a part of the middle ear, is believed to be involved and there may be more or less inflammatory congestion of the adjacent mastoid cells. It is therefore fallacious to say "when the mastoid antrum is involved the mastoid should be opened." This advice, I believe, is generally discredited both by the specialist and the general practitioner. No such arbitrary law can be laid down. In each case a careful study of many factors must be made to insure a timely operation. These factors may be determined by the following steps: (A) A careful otoscopic examination. (B) Examination of the mastoid region. (C) The history of the case and the general signs and symptoms.

(A) The Otoloscopic Examination. What can we learn from this? First, the amount and character of the discharge, including a microscopic examination to determine the infective organism. Second, the appearance of the fundus; that is, the drum membrane and the adjacent canal wall. Third, the degree of deafness.

A careful otoscopic examination is most important, for on that alone without mastoid pain or tenderness and without general symptoms, such as fever, a mastoid operation is in a few cases indicated. Permit me to cite one illustrative case:

Mr. C., aged fifty-two, consulted on November 23, 1907, on account of profuse discharge from the right ear of four weeks' duration. The onset was sudden, four weeks before; severe pain in the ear followed a sore throat. The drum membrane perforated spontaneously and profuse discharge with relief from pain had continued; never any mastoid pain or soreness; no fever, nausea or vomiting; general health

*Read before the Thirty-Eighth Annual Meeting of the State Society, Coronado, April, 1908.

was good. Examination showed the canal full of pus. A stained smear of the pus showed streptococci. The drum membrane was found to be beefy red, thick and sagging above and behind. The deafness was extreme (watch not heard on contact, whisper and speech doubtful). No mastoid tenderness could be elicited, although the patient was warned of the importance of confessing any difference in sensation from pressure on the mastoid of each side. Operation showed that the interior of the mastoid was full of pus; the lower half of the process had broken down, forming one large abscess cavity that extended down to the knee of the lateral sinus. Smears from the mastoid pus, also, showed streptococci.

This case is not uncommon and illustrates the main diagnostic points to be looked for in an otoscopic examination; namely, profuse purulent discharge, the presence of streptococci, a badly inflamed drum membrane with sagging of the postero-superior canal wall and considerable deafness; all of which indicate a severe degree of middle ear involvement.

As to the quantity of the discharge. When pus in large quantity continues to pour from the middle ear after three weeks of ineffective local treatment, the mastoid operation is indicated whether or not there are other signs and symptoms. On opening many mastoids, one can not fail to be impressed with the fact that the destruction within the mastoid is, in many cases, surprisingly great, often having resulted in purulent collections on the brain or lateral sinus without any local or general signs or symptoms having been observed.

The microscopic examination of the ear discharge should be a routine procedure in every case. Smears should be made of fresh pus as it escapes from the perforation in the drum membrane. Of late it has been my practice to carry, ready for use, sterile swabs in glass tubes from which cultures are made. This aids in the differentiation of the organisms. Smears alone are often unreliable. For instance, many reports of pneumococci are said to be inaccurate, culture showing the organisms to be capsulated streptococci. Furthermore, there are several and maybe many varieties of streptococci, varying in virulence. It is an interesting and important part of the subject under discussion, but would be wearisome to treat in detail. All observers seem to agree, however, that the presence of streptococci in the ear discharge indicates a dangerous infection; pneumococci, less dangerous; other diplococci and staphylococci least dangerous.

The examination of the fundus, comprising by that term the drum membrane and the adjacent canal wall, is of great importance. A beefy-red, bulging drum membrane with sagging of the postero-superior canal wall indicates a high degree of middle ear inflammation. This must be differentiated from the bulging, often attended by sagging, that is found in children with exudative catarrhal inflammation. In such cases the mucus character of the discharge, the pale redness of the drum membrane, the slighter degree of deafness, the absence of mastoid tenderness, and the presence of less virulent bacteria serve to clear up the diagnosis.

As to the deafness. In every case the hearing should be tested, at least by the watch, whisper and conversational voice. This is practicable, except in very young children, and aids much when considered with other signs and symptoms. The greater the degree of deafness, the more severe the middle ear inflammation, as a rule. So much for the value of the otoscopic examination. This is treated of first, because it is of the greatest importance, more important, in my opinion, than either the mastoid examination or the general examination.

(B) Examination of the mastoid region. In the great majority of mastoid cases, more or less mastoid tenderness exists. In many cases of middle ear suppuration there is considerable tenderness during the first two or three days, especially when there is little or no drainage through the drum membrane. I do not believe that such tenderness indicates immediate mastoid operation. This tenderness is frequently due to intense vascular engorgement of the mastoid cells and may wholly subside in a day or two after good drainage is established through the drum membrane. It is the persistence of mastoid tenderness that is of serious concern, especially when it persists after the establishment of good drainage through the drum membrane. Frequently a patient on whom a mastoid operation is urged, will advocate delay because the mastoid tenderness is not so acute as in the beginning of the ear trouble. This is not to be relied on as indicating that resolution is progressing without the formation of pus. Until all trace of tenderness is gone the patient is not safe, and even then, the case is a doubtful one if the middle ear inflammation is not in like manner subsiding. The tenderness is usually found by firm pressure at three points—over the antrum, over the tip and over the point of exit of the mastoid emissary vein. The tenderness is usually most acute during the first twenty-four hours, and decreases thereafter to increase again to great severity only when the outer table or its periosteum becomes affected. In such cases edema, of course, is found.

Tenderness over the mastoid is then not to be relied upon as the sole guide to the mastoid operation, but must be considered along with the otoscopic findings and the history of the case. The time limit for the persistence of mastoid tenderness can not be arbitrarily set. In no place does experience count for more in forming safe judgment. Delay in order to be absolutely sure that pus in considerable quantity will be found, is manifestly unsafe. It is, after all, safety to our patients rather than a desire to prove ourselves infallible, that should influence our judgment. While exceptions can be taken and are freely admitted, I believe it is good judgment not to delay over seven days from the onset of the middle ear abscess, provided at the end of that time, *distinct mastoid tenderness exists, and no abatement of the middle ear inflammation is seen.* There are a few cases that will prove exceptions, some that will have to be opened

earlier and some that can safely run longer and finally recover without operation.

(C) The history of the case and the general signs and symptoms. In the history of the case the following points are worthy of note: mastoiditis following the acute infectious diseases is insidious in its onset and greater destruction is apt to result before pronounced signs and symptoms arise. This is likely due to the impaired resistance and is especially pronounced in scarlet fever, measles, and typhoid fever. A history of present or past tubercular trouble is important, for tubercular mastoid destruction is difficult to cure and recurrences are more frequent. A history of diabetes makes the prognosis more grave. The tendency is to delay operation in such cases, even though the mastoid indications are plain. When we realize that in these very cases the resistance of the host to infection is poor it is all the more imperative to operate. The number of deaths from fatal mastoid complications secondary to scarlet fever, typhoid, diabetes, etc., prove the truth of this statement; because investigation of such cases will usually show that there was unwarrantable delay in operating. I reported such a case at the last meeting of the State Society, wherein I was at least partially to blame, as a consultant, for the man's death. It was a case of diabetes in which middle ear abscess occurred. Operation was advised, but not sufficiently insisted upon. After six or eight weeks of apparent absence of mastoid signs, a sudden convulsion occurred and death followed in twelve hours. A large epidural abscess was discovered. There is hardly a doubt but a timely operation would have saved his life:

I reported a similar case at the American Medical Association meeting (in July, 1905), with this difference, that the mastoid abscess complicated typhoid, and thrombosis of the lateral sinus was responsible for the death. Frequently are the mastoid signs thus masked by coexisting diseases.

As to the general signs and symptoms, such as chills, fever, nausea, vomiting, etc., these are rarely met with in uncomplicated mastoid cases, except in children. In adults the general signs and symptoms are of slight consequence, until intra-cranial complications arise. In infants, however, high fever, vomiting and occasionally convulsions occur readily from middle ear suppuration. Such symptoms when otherwise not accounted for, should prompt a careful otoscopic examination. In adults, a slight but persistent rise of temperature occurring in the course of middle ear suppuration is suspicious of mastoid involvement.

As to a differential blood count, this is generally regarded to be of no value in determining upon the mastoid operation, although, of course, of great value in determining complications that produce general infection.

As to the use of vaccines: May we delay operation on the mastoid in order to await the result of curative vaccine injections, which have recently been advocated with some enthusiasm? I should like to have the opinion of those who have had

greater experience in the use of vaccines in other suppurative processes. Personally, while I am trying vaccines in suitable cases, so far I have seen no positive results. While the future may possibly hold much in store for us, I believe that at present it is dangerous to postpone a mastoid operation when the indications are positive in order to await the result of vaccine injections.

In conclusion, *a timely and thorough mastoid operation, we should remember, serves two distinct surgical purposes—it cleans out the mastoid, including the antrum, and in so doing efficiently drains the tympanic cavity.* The latter purpose should not be lost sight of in the discussion of this subject. No one who has opened or seen opened a hundred or more mastoids can fail to be impressed with the rapidity with which the tympanum regains a normal condition after the mastoid operation. Efficient drainage in the cure of infection of other cavities in the body has become a well established surgical procedure. In ear work it is of no less importance. It is not unlikely that we will see in the next decade fewer chronic discharging ears because of more prompt operating in the acute cases.

PROPHYLAXIS AND TREATMENT OF ACUTE OTITIS MEDIA.*

By WM. BARCLAY STEPHENS, M. D., San Francisco.

The recognition of the causes and conditions conducive to attacks of acute otitis media; their removal or prevention, or, failing in this, the rendering of their effects as innocuous as possible, constitutes prophylaxis in this disease.

Congestion of the mucus membrane of the middle ear renders it vulnerable to pathogenic bacteria, and thus liable to an otitis, whether the congestion be the result of an infectious disease, a simple catarrhal condition of the naso-pharynx or some renal or cardiac disorder. Abnormal conditions of the rhino-pharynx are by far the most common source of middle ear trouble. From this proposition the corollary may justly be drawn that a normal rhino-pharynx is the most certain insurance against acute otitis media. Histologically speaking, the cartilaginous portion of the eustachian tube belongs more to the rhino-pharynx than to the ear; the mucus membrane being identical in kind with that of the pharynx, inflammatory conditions in the pharynx are apt to involve the tubes. At the isthmus the type of mucus membrane changes from the columnar ciliated to the tympanic form. This change in the character of the mucus membrane tends strongly to limit the inflammation at this point. This change coupled with the movement of the cilia toward the pharynx, constitutes part of nature's protection of the middle ear.

Acute otitis media is seldom a primary condition, almost invariably it is secondary to some preceding or contemporaneous inflammation of the pharynx, about the only exceptions being in infectious diseases and the accidental entrance of fluids, as in

*Read at the Thirty-Eighth Annual Meeting of the State Society, Coronado, April, 1908.

swimming, or in the use of the nasal douche. Our most fruitful prophylactic efforts then, are practically limited to one end, namely: the attainment and maintenance of a normal rhino-pharynx and adnexa. We are powerless to prevent congestion of the middle ear, arising during the course of a general disease; but we can by keeping the pharynx and tubes in a healthy state, provide the most certain deterrent to the invasion of the ear by bacteria. Healthy mucus membrane is able to care for the numerous bacteria that are normally present in the pharynx. The striving for this desideratum, a healthy naso-pharynx, should be begun in early life and be unremitting. The means to this end are to be found in hygiene, internal medication, and local treatment.

Hygiene—Hygiene has for its main object the prevention of "catching cold," that is, keeping up the bodily resistance so that it may not be susceptible to every draft and atmospheric change. These hygienic practices should begin in infancy. The most important of these, to my mind, are good air and plenty of it, bathing, exercise, proper food and clothing. Keep the children in the open air. Encourage them in games requiring action in the open. Give them wagons, bicycles, and go-carts; garden tools and a sand pile. Have them sleep in a room with a large amount of ventilation from one side, or if the climate is not too severe, in a properly constructed sleeping porch.

Bathing—Keep the skin clean and active. Accustom it to air. In addition to a weekly warm tub bath—a daily morning cold bath, either plunge or sponge, the temperature to be in accordance with the reaction; the bath to be taken quickly and followed by a brisk rub with coarse towel. If perfect re-action does not occur after a full bath, then sponge the neck and chest. Swimming under proper circumstances gives exercise and exposure of the body to the air; but must not be prolonged, and if in the surf, the ears should be protected and diving seldom indulged in.

Clothing—Do not swaddle in clothing; and yet have sufficient for protection. Judgment must be used. The puny, anemic individual will require more than the husky fellow with red blood rioting through his veins. Personally, I favor next to the skin, one of the light, porous, linen underwears, and in cold weather, light woolen pulled over it. It might in this day of automobiles be fitting to mention protection of the ears from the cold and rapidly moving air, especially in young children.

Certain constitutional conditions are especially prone to bring about conditions favorable to the development of acute otitis media. Each will demand its appropriate treatment, selection of which treatment will oftentimes demand the best skill of the attending physician. Of these conditions, may be mentioned, marasmus, lymphatic temperament, uric acid diathesis.

Local Treatment—Local treatment consists of keeping the parts free from pathological secretions and the application of appropriate remedies for the

removal of the causes; the restoration of the nasal breathing in the various forms of hypertrophic rhinitis; the removal of hypertrophied tonsils and adenoids. Of the exanthemata, measles and scarlet fever are the ones in which we are most apt to have involvement of the ears, the aural condition seeming to be part of the general eruption. This we cannot prevent; but we can try to prevent the entrance of additional infection from the pharynx. Keep the pharynx and nose cleansed with alkaline antiseptic washes, followed by swabbing with one-half per cent solution argenti-nitratis, or instillation of a solution of 5% to 10% argyrol, or introduce, as suggested by Weiss, 1% yellow oxide of mercury ointment into the nares. The same should be done in grip and typhoid fever. Otitis in typhoid fever is apt to occur in the fourth or fifth week of this disease. According to Oatman, this is due to the absorption of the little pad of fat in the anterior wall of the eustachian tube, thus rendering the tube more patent than normal. The same would hold true of other wasting diseases, and atrophic conditions of the nose and throat. Care should be exercised in children, who are susceptible to otitis media, in blowing the nose; especially when they have rhinitis—for it is easy to force mucus from the pharynx into the ears, through the short, straight, and rather patent tubes of early life.

It is my purpose in speaking of treatment of acute otitis media, to be practical as possible, avoiding technicalities. What is here meant by acute otitis media, is an inflammation of the mucus membrane of the middle ear, which if it does not subside, or is not aborted by remedial measures, goes on to the exudation of serum, sero-mucus, or sero-pus. In common parlance the early stage is known as earache and the later as abscess of the ear. For the relief of the pain and the cure of the disease, all sorts of expedients are resorted to by the laity, under the advice of solicitous friends and relatives. Much harm and little good is done by the various ear drops. All oily and irritant solutions are to be absolutely forbidden. The first afford excellent nutrient media for the growth of bacteria, and the second cause dermatitis of the canal. Likewise, figs, onions and various other kindred substances should not be put into the canal. I usually tell my patients that if heat applied externally, and douching the ear with hot water, does not relieve, a physician should be sent for. The instillation of hot water or a solution of cocain, are the only things I approve. Morphin may be added; but laudanum stains and prevents an accurate diagnosis, when the membrana tympani is inspected. At the outset I may say that I regard incision of the membrana tympani as the remedy, *par excellence*, in acute otitis media. However, I do not mean to say that it is necessary in every case.

Following an obstruction of the eustachian tube by a simple catarrh or by a congested adenoid, there may be, after absorption of the air, an exudation of serum into the middle ear. The rapidity with which the filling up of the middle ear with serum may oc-

cur, especially in young children, is marvelous. I have seen ears with no visible inflammation and an indrawn membrana tympani, in which an hour later the membrana tympani is bulging out and the cavity filled with serum. The inflammation of the tube being largely limited by the change of the mucous membrane at the isthmus, so that the inflammation if extending into the middle ear is of mild type and carries with it only harmless bacteria. Only the lower portion of the middle ear—the hypo-tympanum—is usually involved, and the change in the mucus membrane slight.

In this class of cases when seen early and the amount of fluid is not great, we are justified in trying to abort the attack, before resorting to a paracentesis. Calomel or castor oil should be administered. First the condition of the nose and throat is to be looked into and in fact this should be the first step in all cases of acute otitis media. First cleanse the naso-pharynx with an alkalin solution, adrenalin chlorid 1-5000, or other supra-renal capsule solution is either instilled into the nares with a pipette, or with a cotton carrier an application is made to the congested adenoid and orifice of the eustachian tube. Then the ear may be inflated with a Politzer bag with the hope that the patency of the tube may be restored, the adrenalin having relieved the congestion about its orifice. An application of one of the silver preparations is then made posteriorly, with a curved cotton applicator; or in case of small children, 10% solution of argyrol is instilled into the nares, with a dropper, the child lying upon its back. The object of these measures, of course, is the re-establishing of ventilation and drainage of the ear through the tube. The alkalin solution cleanses out the mucus and some of the bacteria which are usually present in the pharynx, thus rendering less likely their entrance to the ear. The method of making the alkalin application is probably worthy of note. In children, a syringe with a soft rubber tip is my choice—the child lying on its side, the solution is injected gently and allowed to flow out of the mouth and opposite nostril. In some intractable children, a small amount may be dropped into the nostril and a syringe with a large tip used to aspirate the solution and secretions from the nose. In adults or older children, a free spraying with an atomizer or a douche cup may be used. If the douche cup is used, the fluid should be introduced through the more constricted nostril and allowed to flow out through the less obstructed one. Take care not to swallow during the process or to close off the nose too much when blowing it. Dry heat applied, in the form of a hot water bag, or hot salt, or electric heating pad, is usually grateful to the patient.

These measures failing, the membrana tympani should be opened in the posterior inferior quadrant. A simple puncture is all that is necessary. Preceding paracentesis, the canal is rendered as aseptic as possible. If no anesthetic is to be administered, and in the majority of these cases none is necessary, alcohol is used for the cleansing of the canal, for the

reason that it does not macerate the membrana tympani, leaving it dry and thus easily penetrated by the knife. The knife must be very sharp. The knives usually made for the purpose are rarely sharp enough, so I generally use a narrow-bladed cataract knife. The incision is made quickly, and care taken not to wound the mucous membrane of the inner wall of the ear. Done in this manner, the operation is almost without pain. The membrana tympani is often bulged out and looks like a blister. The evacuated serum is sterile or shows only innocuous organisms. The canal is now wiped out with dry cotton and sterile gauze is placed in the canal, and the ear covered with cotton. Provided that the pharyngeal condition has been remedied, the membrana tympani is closed within twenty-four to forty-eight hours. If, however, the cause has not been removed, the ear may continue to discharge for a long period, taking on a sub-acute or a chronic form, the discharge being a thick tenacious mucus.

Under these circumstances it will usually be found that an excessive amount of adenoid tissue is present and its removal will be followed by a rapid improvement in the ear condition, the otorrhea often ceasing in a day or two following the adenectomy. Irrigation may at times be necessary if profuse discharge continues. A boric acid or normal salt solution is generally used—the temperature 100° to 106° F. In these cases complications—as mastoiditis—are seldom seen, unless the ear becomes infected.

The introduction of the element of infection immediately adds to the seriousness and severity of otitis media, the severity of the attack being in proportion to the virulence of the infection, and the lack of resistance of the individual, and calls for correspondingly vigorous and prompt treatment. The question naturally follows, as to how we are to tell at the outset whether the attack is one arising from simple tubal obstruction, without any or only harmless infection, or of a more severe type. In this we are guided by the history, constitutional symptoms and age of the patient; the appearance of the membrana tympani and canal and the condition of the nose and the pharynx. If the patient is a child, and in conjunction with a cold in the head, has earache accompanied by slight or no rise of temperature, no prostration, a membrana tympani indrawn or bulging, but translucent and shining, slight injection and no involvement of the canal, a diagnosis of the simple or mild form is justified and treated accordingly. But if on the other hand, the attack comes on during the course of an infectious disease, with marked exacerbation of the constitutional symptoms, membrana tympani bulging, congested and dull, bulging of Schrapnell's membrane, adjacent portions of the canal congested, and tenderness of the mastoid, a virulent type is inferred and prompt and energetic treatment indicated. Between these two extremes will be found doubtful cases, but in case of doubt, assume to be virulent.

In these cases there is not the tendency for the inflammation to be limited to the hypo-tympanum,

but rather to spread to the contiguous parts and with the drainage through the tube shut off, the pressure of the fluid first forces out the membrana tympani. This failing to rupture, it may find its way into the mastoid cells, the labyrinth, the carotid canal, or some hiatus in the inner table of the skull or facial canal. In young children, leptomenigitis may occur through the nerve sheaths or blood vessels or sinus thrombosis through the veins. It is claimed by some that the membrana tympani of the infant is more resistant to rupture than that of the adult; be this true or not, the adjacent parts are more liable to involvement than in the adult, the mastoid antrum being almost a part of the middle ear, and the bone being so soft as to offer no resistance, when once necrosis begins.

The severity and extent of the involvement are variable, the infection not always producing the same amount of disturbance. In certain years, infectious diseases seem to take on a more severe form than in others—so with acute otitis media. There seem to be in some years and seasons more virulent types than in others; however, as we look upon scarlet fever with more dread than measles, so we would fear more a streptococcus than staphylococcus infection. There is no positive means of knowing what the infection is, until after opening of the membrana tympani. Then a smear or culture usually gives us definite information. The streptococcus, staphylococcus, pneumococcus, and streptococcus capsulatus are among the more common organisms found.

In these cases no time must be wasted in palliative measures or efforts to abort the attack, but prompt and thorough opening of membrana tympani is demanded. As a rule, a general anesthetic is necessary. The preliminary cleansing of the canal by irrigation with bichlorid 1-5000, boric acid solution or even boiled water, or with alcohol, is completed and the canal dried before anesthetising, so that advantage can be taken of primary anesthesia. If only the main cavity of the middle ear seems involved, the incision is made with a straight knife along about one-third of the posterior and inferior border of the membrane. If Schrapnell's membrane is bulging or if congested, showing trouble in the attic, a curved knife is used, following the same line of incision, but the incision is made from below upward, and the point of the knife passed on up into the attic, dividing some of the folds of mucous membrane surrounding the ossicles; or the knife can be withdrawn and a separate opening made through the Schrapnell's membrane. If there is much mastoid tenderness, I frequently turn the knife posteriorly and superiorly, and cut out through the canal, that is a modified Wilde's incision. Having opened the ear in one of these ways, we have made our best effort toward a cure and prevention of complications. If the exudate in the ear is thick and does not easily come out, the ear may be aspirated with a Siegle otoscope. Some advocate this as a routine practise, but I am as yet in doubt as to its advisability. The canal is cleaned with either cotton or

by irrigation, and gauze inserted. In ordinary cases the ear is irrigated, as a rule, every three or four hours. If the discharge is profuse, more frequent syringing may be necessary or if there is mastoid tenderness, to promote the discharge, very frequent syringing with solutions as hot as can be borne.

The solution used is not so important as the way it is used—boric acid solution, 1-5000 bichlorid, boiled water or normal salt solution. I usually order for the irrigation, a syringe in the form of a rubber ball with a soft rubber nozzle. It is all in one piece and being of soft rubber may be sterilized by boiling. The attendant is directed to have the temperature of the solution, 100° to 120° F. in accordance with whether cleansing only is desired or also the effect of heat locally applied. If for the latter purpose, a fountain syringe may be substituted. The canal is straightened by traction upon the auricle and the tip of the syringe inserted one-fourth to one-half inch in the canal, and a gentle but firm and even pressure is made upon the syringe. See that there is no air in the syringe as the noise of the bubbling air is distressing to the patient. After irrigating, dry with cotton and insert a piece loosely into the canal. If mastoid tenderness continues in spite of the syringing, an ice-bag may be applied to the mastoid from twelve to twenty-four hours. If ice is not well borne, heat may be tried. I have seldom seen any benefit from the application of leeches; but if they are used, about six should be applied at once, four posteriorly and two anteriorly to the ear. The canal should be tightly plugged to prevent the leeches from taking hold there. The leeches leave the parts tender and so obscure somewhat, the presence of mastoid tenderness.

Assuming that we have had an ordinary case to deal with, following the incision of the membrana tympani, there is seen a marked cessation of the pain and constitutional symptoms, the patient in many instances having lost much rest, falls quickly into a quiet sleep. The discharge is profuse for a few days, the canal being kept clean by the irrigation. Then the discharge begins to lose its purulent character, being more scanty and mucus-like—syringing is done less frequently and presently discontinued for dry cleaning. The incision gradually closes, and the ear is restored to health in from ten days to two weeks. If on the other hand the discharge after a few days grows more profuse and purulent, and mastoid tenderness persists in spite of the douching, and application of ice or heat, and constitutional symptoms continue, the mastoid will probably have to be opened. Occasionally a day or two after opening the ear, there appears in the incision and over the membrana tympani a white membrane or exudate, which can only be removed by forceps. It re-forms in a few hours and greatly obstructs drainage. The discharge is thin and serous. I have not found any one organism in all cases. The membrane usually ceases to form after three days; but I have seen it persist for over a week. It causes much pain by obstructing drainage and also in its removal. It is possible that one

of the digestive ferments might help to cleanse off the membrane; but I have not tried them. Persistent removal with forceps has effected a cure in all cases.

In the grip, we oftentimes have otitis media, not differing from those cases occurring without the grip, except that they are more severe; but the true grippal ear is rather characteristic. The membrana tympani is apt not to be bulging as a whole; but rather in the form of blebs, either filled with clear serum or a sanguineous fluid—ecchymoses of the canal and even small hematomata—a bleb or two on Shrapnell's membrane. The membrana tympani being incised, and each of the blebs opened, there is an escape of bloody fluid and serum. Some of these blebs are on the membrana tympani and not connected with the middle ear. There is much swelling of the mucus membrane and of the submucous tissues of the middle ear, and drainage is only fairly good. The discharge is serous and continues so to the end, unless other infection is added, when it may become more pus-like and profuse. There is apt to be marked pain of the mastoid and in the muscles of the neck, persisting for several days. Iodin painted on, has given me the best results. The existing grippal infection seems to afford especially fertile soil for other infections—hence complications are common and should be carefully watched for.

In scarlet fever, involvement of the ear is common and occurs during desquamation; that is, in the third or fourth week, and the process is exceedingly rapid. It seems to be as a rule, a streptococcus infection engrafted upon the specific scarlatinal infection. Necrosis of the mucus membrane, overlying the bone, occurs early and, the bone being deprived of its nutrition, also necroses. The membrana tympani ruptures early and tends to slough away. Involvement of the mastoid and labyrinth is common. It is the most destructive form of otitis media we have, and the one yielding least to treatment. We therefore should redouble our prophylactic measures, and be most prompt in making a paracentesis.

In diphtheria, the ear is not nearly so frequently involved as in scarlet fever, and there is little tendency to spontaneous rupture of the membrana tympani.

In measles, it is fairly frequent, arising chiefly during desquamation; that is, in the second or third week. The other infectious diseases do not seem to have any especial predilection toward the production of acute otitis media, except by giving rise to congestion of the mucus membrane and so making it more liable to infection—hence reasonable prophylaxis should be exercised in these cases and in the presence of any wasting disease.

In our attention to the ear, the general bodily condition must not be neglected. See that the bowels are kept well cleared out and that proper nourishment is administered.

I desire to enter a special plea for the recognition of the importance of acute otitis media in infancy and childhood. Many an infant has died from men-

ingitis caused by unrecognized acute otitis media and many a child has grown up with a discharging ear, or handicapped by impaired hearing from the same cause. I wish again to call attention under prophylaxis, to the prominent place colds and abnormal conditions of the rhino-pharynx play in the etiology of acute otitis media; and under treatment, to emphasize the value of early paracentesis and the necessity of asepsis at the time of the incision, and in the subsequent treatment of the ear.

PATHOLOGY OF ACUTE PURULENT OTITIS MEDIA AND INDICATIONS FOR OPERATIVE INTERFERENCE IN ACUTE MASTOIDITIS WITH REPORT OF INTERESTING CASES.*

By CULLEN F. WELTY, M. D., San Francisco.

In the majority of cases, the primary process in the middle ear is that of acute, catarrhal inflammation which is characterized by the presence of the exudate which develops rapidly, accompanied by more or less reaction. This effusion may be purulent or muco-purulent in character and involves the whole of the middle ear, and is usually of short duration (by the middle ear, we mean eustachian tube, tympanic cavity and mastoid cells). The anatomical changes consist of the marked hyperemia which is followed by a muco-purulent exudate into the interstitial tissue of the tympanic cavity, not so much marked in the eustachian tube and the lining membrane of the mastoid cells. This exudate in the middle ear consists of a thick, cloudy fluid mixed with mucus and pus cells, containing many blood vessels. The greatest predisposing factor in the causation of this condition is an obstruction of the eustachian tube.

However, there is another theory that is more popular to-day, and that is of germ infection. The question naturally arises, did germ infection of the middle ear cause the exudate and closure of the tube, or was the exudate produced by the closure of the eustachian tube, and afterwards infected? I am inclined to the theory of germ infection primarily. It must be accepted that acute otitis media has its origin in bacteria infection and that the diplococcus pneumonia and streptococcus pyogenes are most frequently found in the secretion and are the exciting cause of this form of infection.

The following have also been found: Staphylococcus pyogenes alba and aureus, bacillus pyocyaneus, pneumonia bacillus, bacillus coli, meningococcus intercellularis, the diphtheria bacillus in middle ear diphtheria, the tubercle bacillus, the gonococcus, influenza bacillus, the typhoid bacillus in the tympanic cavity of patients who have died of typhoid fever. It was shown by Madoleczny that immediately following paracenteses, the secretion cultured in a pure media showed that the streptococcus occurred, just as often alone as in combination with other pathogenic micro-organisms.

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Politzer says, undoubtedly the streptococci make their appearance late in the disease and approach by way of the eustachian tube or a rupture of the drum membrane. It is also noted that in such infections, all the symptoms are more aggravated. There is more likelihood of a mastoiditis, an extradural abscess, and cerebral complications of any kind. Individual predisposition, and resistance on the part of the patient have a great deal to do with this whole subject of infection. The invasion of pathogenic micro-organisms into the middle ear takes place most frequently by the eustachian tube. Secondarily, by the lymphatics. The third entrance is by the blood through the walls of the vessels. The fourth entrance from a perforated or intact drum membrane from the external auditory canal. The terminations of an acute middle ear inflammation are: first, rapid recovery; second, the transition of the inflammation into a chronic form of secretory catarrh which either subsides gradually or leads to adhesive changes in the sound conducting apparatus, which constitutes one of the large forms of chronic deafness; third, acute purulent inflammation of the middle ear with perforation of the tympanic membrane; fourth, extension of the inflammation to the mastoid process with consecutive formation of abscess within them; fifth, extension of the process to the dura mater, pia mater, and neighboring sinuses; sixth, death through general septicemia without a diseased condition of the sinuses.

Of the terminations, the one that we will direct our attention to is that of acute purulent inflammation of the middle ear. The inflammatory changes of the mucous membrane are more intense and the discharge which is more copious, contains a greater number of pus cells. The pathologic changes are invariably distributed over the entire mucus membrane of the middle ear. Even in cases where no mastoid symptoms are present, the changes have been found at postmortem. The effect of the chemical bodies, produce the reaction that is characterized by hyperemia, exudation, diapedises, of round cells and the formation of new blood vessels. If the hyperemic stage progresses we find various changes dependent upon the intensity of the inflammation. The mucosa becomes more deeply red or mottled from small hemorrhagic areas, the mucous membrane becomes more swollen, the tympanic cavity is filled with a muco-purulent or purulent exudate, microscopically loosened or exfoliated epithelium.

The sub-stratum is filled with round cells, blood vessels are distended and small hemorrhagic areas are scattered throughout the mucosa. When the inflammation is intense as in scarlatinal otitis, we will notice areas of necrosis scattered throughout the membrane. These areas of necrosis correspond to the deposit of the micro-organisms. It has been clearly proven by Politzer and others that pus may remain in the mastoid cells for a long time and finally become absorbed. However, this condition only takes place under peculiar surroundings. First, pus must not be absolutely confined or it would pro-

duce pressure symptoms; second, the micro-organisms must not be of the virulent type. The symptoms of acute purulent inflammation of the middle ear are pain, fever, and general malaise. The most important of these is pain, which is usually very intense, radiating to all parts of the head and down the shoulder of the same side. A complete remission is seldom observed. It is made worse by any effort on the part of the patient. Occasionally, painful points especially on the vertex in the course of the trigeminus. In rare instances the disease is ushered in by vomiting, chill, and vertigo. An elevation of temperature from 1° to 4° . In children the temperature is invariably high.

Appearance of the drum-membrane: In the primary stage there is a congestion about the handle of the malleolus, and the osseous meatus is very much reddened near the membrane. In a few hours the membrane may be scarlet red or livid, ecchymotic and swollen. In the otitis of influenza the membrane is covered with an exudate or with hemorrhagic bulla. The posterior segment is more prominent, which indicates a collection of fluid within the tympanic membrane or within the tympanic cavity. The perforation usually occurs in the posterior inferior quadrant and the anterior inferior quadrant. They are as a rule small and very hard to find. Large perforations are due to the more virulent infections. Double perforations are usually dependent upon tubercular process of the ear.

The Terminations.—The terminations of acute purulent middle ear inflammations are: First, cure by complete restoration of the hearing; second, transition of the purulent inflammation into a sero-mucous catarrh after cicatrization of the perforation; third, disturbance of hearing after closure of the perforation due to connective tissue adhesions in the tympanic cavity; fourth, permanent loss of hearing due to invasion of the labyrinth in cases of infectious diseases; fifth, inflammation of the mastoid cells. This is especially so in influenza and in infectious diseases; sixth, destruction of the membrane, perforation of the labyrinth, caries and necrosis of the tympanic wall and ossicles with exfoliation of the same. This latter is observed more particularly in scarlatinal and diphtheretic infections, more rarely in measles, typhoid fever and tuberculosis; seventh, probably in death with an intact or perforated tympanic membrane due to cerebral infection; eighth, chronic middle ear suppuration with the many complications that naturally follow.

I have outlined this part of my subject very carefully so as to make each step in the progress of the infection important. It is my belief that when an individual case is studied with such care the threatening symptoms, or rather the symptoms that call for operative interference will be better appreciated. If such a routine is followed, the physician will not be responsible for the death. *You must always bear in mind, that in mastoid surgery a competent man can only do good.* Occasionally a case will be operated that would have recovered

without operation. *On the other hand by delay, in a shorter or longer time a life will be sacrificed.* So reasoning, would it not be better to do ten unnecessary operations rather than sacrifice one?

In a given case of acute purulent otitis, accompanied by pain and redness of the drum membrane, I prescribe calomel 1/10 to 1/5 grain every half hour until one grain is taken, followed in six hours by magnesia. Patient is put to bed, tampon, saturated with hot Burrow's solution put in the ear and gauze about three inches in thickness covered by oiled silk saturated with hot Burrow's solution for the outside to cover the ear and mastoid. In many instances the pain will entirely subside, the drum membrane become pale and the patient be well the next day. However, if the pain does not subside apply additional heat to your outside dressing, which may be either wet or dry. If this does not accomplish what you wish in the course of six or eight hours, the dressing must be removed and the ear examined. By this time it will be noted that there is an intense redness of the drum membrane and more than likely it will be bulging. Some temperature, may or may not be pain on deep pressure over the mastoid, may or may not be bulging of the posterior superior wall of the meatus near the drum membrane. Free incision of the drum membrane is indicated, and the same procedure in regard to the dressing that I have spoken of before. If the symptoms have not been relieved within the following twenty-four hours it is more conservative surgery to open the mastoid process. My reason for this is described in a few words,—*what causes the pain?* Retention of pus, and as the drum membrane has been freely incised, where can the retention be? *The mastoid cells are the only remaining place.* It is more than probable that there will be retention in but one or a few cells. At the same time to delay, subjects your patient to added risk of cerebral complications. No doubt some of you may use and prefer cold applications to the mastoid. I say they should not be used at all for the following reasons: That cold so numbs the parts, that your real symptoms are masked and that is the worst possible thing to wish for. I wish to make another broad general statement at this place. If following a free incision of the drum, the pain is not relieved by the application of moist heat, your case should be operated. A patient with acute mastoiditis should never be given a narcotic of any kind for the reason that it masks the very symptoms that you are watching so carefully.

In another instance you see the patient for the first time on the third day of the disease. The drum membrane has ruptured and there is a small perforation, the pain is not so intense, and the temperature almost normal. Apply the same dressing and medication that I have recommended in the beginning and more than likely it will get well.

Patient seen for the first time on the fourth day, small perforation of the membrane, bulging of the membrane, bulging of posterior superior wall of the meatus, some tenderness of the mastoid region, some

temperature; free incision of the drum membrane, with treatment and dressing such has been outlined before. If within 24 hours all the symptoms are not better the safest procedure is that of operation.

After the 10th day of suppuration from the middle ear, with a bulging of the posterior superior wall, an operation should be done at once, without any other indication; it invariably speaks for pus retention. It matters not where you find it, in acute or chronic suppuration. If after the 20th day a profuse discharge continues, it is better, and more conservative surgery to drain. This is not because of retention, but because of large pneumatic cells with extensive inflammation and destruction.

Another indication for operation is where a discharge continues for more than six weeks. During the later weeks adhesions have taken place, and more will follow if allowed to continue. In other words there will be an impairment of hearing, and to avoid this and give your patient the advantage of everything that he deserves, an operation is indicated.

We must bear in mind, that in so operating cases such as I have outlined, the discharge from the ear in many instances will entirely disappear in from four to six days. The delayed cases are the ones that produce the trouble, because of the pathologic changes that take place as the disease progresses and as the retention symptoms develop. If after an acute purulent otitis has progressed steadily for the good, the discharge much lessened, suddenly, pain in the mastoid develops, we should operate at once. If after the drum membrane has entirely healed, there is acute pain in the mastoid region, immediate operation is indicated. Increase of surface temperature over the mastoid region, always speaks for mastoid involvement and the safest procedure is that of operation. Infiltration and edema over the mastoid cells, calls for operation. It may be due to perforation of the mastoid, or to a periostitis produced by diseased mastoid, or to an occlusion of the mastoid vein. Facial paralysis occurring during middle ear inflammation always calls for immediate operation.

You must bear in mind that practically all cerebral complications call for immediate operation. If you are quick enough, you may head off the disease, and save the life of the patient. Desperate diseases require heroic efforts, and at times a mistaken diagnosis may be made, and an unnecessary operation, with a possible fatal termination, that must not deter you from using your best judgment at all times.

Case 1. Referred by Dr. C. L. Biglow, female, 22 years. Wife of a doctor. Always in good health until the present illness which began 24 hours ago with very acute pain in the right ear. She was given a purge, and the various kinds of drops for the relief of pain, but with slight effect. I was called the morning of the second day, found the patient had a temperature of 101°, very acute pain in the ear, which radiated to the whole side of the head.

The surface temperature of the mastoid increased in comparison with the other side. Sensitive to pressure and percussion over and about the mastoid, bulging of the membrane with small perforation in

the posterior inferior quadrant. Made free incision of the membrane and applied dressing as before spoken of. Told patient that if she was not improved by the following day, an operation was indicated and would have to be done at once. The following 24 hours, the pain was probably as severe as before. A very restless night, requiring morphine. Following morning, the temperature was 102.5°, surface temperature increase, bulging of the posterior and superior wall. Not so much pain because of the morphine. Entire side of the head sensitive to pressure and percussion. Operation two hours later.

Operative Findings.—Large pneumatic mastoid. The individual cells had broken down making one large cavity which was completely filled with sanaceous pus and was under considerable pressure. Attic opened and operation completed. Bacteriological examination, pure cultures of streptococci. These findings explained the rapidity of the progress. Ear free from pus in six days. Posterior wound healed completely in 16 days. Three weeks following the operation, hearing normal. This case illustrates very beautifully how necessary it may be to operate early.

Case 2. Clinical Case: Male, 27 years. Traveling salesman. Always in good health until the present illness which began three weeks ago, with acute pain in the left ear. This increased in severity for a short time and was relieved when the ear began to discharge. Since that time has not troubled him much with the exception of an increasing fullness on that side of the head for the last ten days. The discharge from the ear has become very offensive.

Examination.—Temperature, normal, no pain on this side of the head complained of. On deep pressure, pain is elicited over the tip of the mastoid. No increase of surface temperature. Bulging of the posterior superior wall was so great that the landmarks of the tympanic cavity could not be seen at all. Bulging of the membrane and a small perforation low down. Immediate operation advised and done.

Operative Findings.—Large pneumatic mastoid. All the cells destroyed. Pus under considerable pressure. Attic opened. Free incision of the drum membrane. Bacteriological examination; pneumonic infection. Ear dry in four days. Posterior wound healed completely in ten days. The patient left immediately.

As to the ultimate outcome of the hearing, I am not able to say. As to the discharge of pus, continued for about six weeks prior to operation. If his hearing is impaired at all, it is due to the delay of an early incision of the drum membrane which would probably have relieved all his symptoms. I report this case to show you the importance of the bulging of the posterior superior wall occurring late in a purulent otitis. This was my only indication for operation.

Case 3. Referred by Dr. Marshall: Infant 11 months. Bottle-fed baby. Never had infectious disease. Never entirely healthy. Three months ago noticed that for several days the child was very restless and had fever and a discharge of pus from the right ear. Shortly a swelling appeared back of the ear that was incised (Wild's incision) and a teaspoonful of pus discharged. Was dressed every second day for two weeks and healed. Shortly following swelling appeared back of the ear and at the outer angle of the eye of the same side. Both incised and dressed every second day for about six weeks. Neither wound would heal. The discharge of pus continued from the ear following all three operative procedures. Finally the case was referred to me. The child was much emaciated, suffering very much from malnutrition. By probe, roughened bone was detected back of the ear. Could not

detect anything by a probe from the sinus at the other side of the eye. The meatus was so swollen that I could not see the membrane at all. The discharge from the ear was foul and offensive. Temperature 102°. Pulse very rapid.

Operative Findings.—In infants the mastoid cells are not developed, so I knew the perforation must be above and back of the ear, i. e. the antrum was perforated. This perforation was made quite large to allow free access to the discharge of pus and further search made for the fistulous communication which was not found. However, I did find roughened bone above the perforation. In curting it away the dura was uncovered and the operation was completed after an incision of the drum membrane, which could not be seen. Wounds and ears dressed every second day. Discharge from the fistula about the eye stopped in four days. Discharge from the ear stopped in three weeks. Discharge from the fistula back of the ear stopped in four weeks. Child apparently well and has remained so.

I speak of this case particularly to show you the fallacy of Wild's incision which should never be used at all. Had this patient had the proper attention at first, there would not have been a fistula and the patient and the family would have been relieved of much trouble and great anxiety. The fistula about the eye was due to the roughened bone above the perforation, and when removed the fistula closed. By enlarging the bone perforation and free paracentesis, good drainage was established, and the child made a recovery.

Case 4. Referred by Dr. Kugler: Female, 18 years old. Acute purulent otitis for the last four weeks. Some pain during the first week. Practically no discomfort until a few days ago, when a swelling was noticed back of the ear. Temperature 102°. She had been treated by the family physician, who told her to syringe the ear twice a day, and everything would be all right.

Examination.—Four weeks after the initial onset. Increased surface temperature over this mastoid in comparison with the other. Temperature 102°. Pulse 180. Indefinite pain over the whole side of the head. A decided swelling of the mastoid and particularly painful over the mastoid. Pus very offensive. There was so much bulging of the posterior superior wall that the drum membrane could not be seen at all. Immediate operation advised and done.

Operative Findings.—A perforation of the tip of the mastoid with considerable extravasation of pus. The whole of the mastoid, which was of the pneumatic variety, was filled with pus and granulation tissue, which was under considerable pressure. The whole of the tip of the mastoid had to be removed and the attic was opened. A free paracentesis of the drum membrane. Packed with iodoform gauze. Because of extensive disease of the mastoid and the involvement of the sinus, I feared very much a sinus thrombosis. However, the temperature soon dropped to normal, and never reached 99° after. The ear was free from pus at the second dressing. The case made an uneventful recovery, with hearing unimpaired. This case again illustrates what extensive disease may take place with but a few symptoms. It further illustrates that general practitioners should not deal with such cases. I am thoroughly convinced that there was a bulging of the posterior superior walls in this particular case a week following her original infection.

Case 5. Referred by Dr. J. B. Hanna: Female, 35. Has had an acute otitis for the last five weeks. Has had various kinds of drops and soothing applications for the relief of pain. Has had hot and cold applications to the ear without relief. More or less pain over the whole side of the head for the last two weeks.

Examination.—Temperature 101°. Increased surface temperature of this mastoid. Tenderness of the whole of the mastoid and particularly over the tip. A bulging of the posterior superior wall. A small perforation in front and below. Advised immediate operation because of the duration of the disease with bulging of the posterior superior wall and increase of surface temperature, added to the sensitiveness on pressure. Operation recommended and done on the following day.

Findings.—After a free paracentesis, the operation was done in the usual way. Large pneumatic mastoid. Each individual cell as well as the antrum was filled with edematous membrane. I called this edematous mucous membrane. I do not know a better name for it. As the individual cells were cut across, this mucous membrane or possibly granulation tissue would bulge from the cavity. Pus was not found in the cells, but was found in the antrum. My explanation of this pathological condition is that the inflammation had begun to subside. No doubt all these cavities were primarily infected to produce the condition spoken of. However, I am of the opinion that had the operation not been done she would have had a brain infection. The discharge from her ear had entirely ceased at her first dressing. The posterior wound had healed in four weeks. Hearing impaired because of long duration of discharge.

Case 6. Child 6 years old. Has had pain in her ear off and on for the last week. Considerable tenderness over the mastoid. Temperature 101°. Pulse 120. No increased surface temperature. The pain at night is so intense she cannot sleep. Relieved by hot applications.

Ear Examination.—A bulging of the posterior superior wall which extends into the drum membrane. The drum membrane is very red. A free paracentesis was advised and done, and the same treatment carried out that I have recommended before. The following day the temperature had dropped to normal, there was not so much tenderness over the mastoid. A hot compress and hot tampons were again applied. The patient resting very comfortably during the day and night complaining of no pain whatever. The third or fourth day following the paracentesis a bulging appeared in the posterior superior wall. Temperature 101°. Pulse 120. Did not complain of pain. However I recommended operation. Done the same day. I again incised the drum membrane and did the operation in the usual manner. A pneumatic mastoid. The mucous membrane of each cell was so inflamed that it completely filled the cell. I did not encounter pus until I got into the antrum. The mucous membrane at this place had the same appearance as that of the cells, besides it was bathed in pus. The ear was dry about ten days after the operation. The posterior wound closed in three weeks. Following the operation she continued to have some pain in the mastoid region and some temperature. The only way that I can account for this is that I overlooked an individual cell that went on to the formation of pus, breaking its way through to the operative field, or because of the virulence of the infection which was improved by the application of a bi-chloride dressing. Otherwise this case made an uneventful recovery.

Case 7. Referred by Dr. H. C. Moffit: Infectious sinus thrombosis from delayed operative interference, in a case of mastoiditis of four months' duration. Reported in full in "California State Journal of Medicine." This case illustrates very beautifully the cerebral complications that are sure to follow if not operated. Made complete recovery.

Case 8. Clinical case: Fracture of base of skull followed by acute purulent otitis, mastoiditis, infectious sinus thrombosis. Four weeks since accident. Recovery. This case again illustrates very

beautifully the importance of early operative interference, especially when associated with fracture of the base. Reported in full in the "California State Journal of Medicine."

In conclusion I wish to say that the bulging of the posterior superior wall of the meatus is almost a constant factor with pus retention. That more significance should be directed to this purulent condition. That the absence of fever and pain must not be taken into consideration when you have a bulging of the posterior superior wall. That the presence of fever and pain without bulging of the posterior superior wall must be indications sufficient to warrant operation especially when coming on late.

In a series of twenty-seven cases, hearing was impaired in two due to delayed operation. Hearing unimpaired in the balance. All the cases are absolutely well.

The longest duration for closure of the posterior wound was six weeks in two cases. The shortest ten days. The longest duration for pus from the meatus was four weeks in one case, the shortest my first dressing. The average about six or ten days.

All the cerebral complications developed from delayed operative interference.

If you follow my suggestions you may do an occasional unnecessary operation, but I am confident that your patient will not die of cerebral complications.

I do not mind repeating a statement I made at the Ear Section of the American Medical Association, June, 1907. Acute cases of mastoiditis should never terminate fatally, and I am confident they will not if they are operated soon enough.

DISCUSSION OF THE SYMPOSIUM ON OTITIS MEDIA.

Dr. A. C. Rogers, Los Angeles: So far the subject has been gone into very extensively and very satisfactorily. The gentlemen who have read the papers have passed over one point and another in the most satisfactory manner, and I feel entirely incompetent to add anything except this one thing: I believe we should urge upon our brother practitioners, the men who are doing the practice of medicine in their respective localities, that they should form and follow this invariable rule, that every sick child presenting the common symptoms of fever, and pain, or restlessness, or unconsciousness, should have a careful examination of the external ear.

Dr. E. W. Fleming, Los Angeles: The time allotted for discussion is so short that it would be impossible to cover all the points brought up by Dr. Hastings in his most comprehensive and interesting paper. I am on the program to discuss his paper and therefore mention it particularly. I shall touch only briefly upon a few of the points dwelt upon by the essayists. If all cases of mastoiditis following acute otitis media coming to us for an opinion corresponded to that class in which all the classical inflammatory manifestations, both at the fundus of the ear and in the mastoid region, are present, the duty of the surgeon is plain. Recovery, however, even in this type of cases has occurred in my practice in patients who refused operative interference of any kind. Two types of mastoiditis frequently met with are, first, those cases where the manifestations of inflammation in the mastoid bone are especially pronounced—while the drum membrane and deeper canal appearances are at no time well defined—and

second, cases where the very opposite conditions prevail. Another and quite the most difficult class of cases are those which show little or no adequate local or systemic manifestations to help us to determine the true condition of the patient. These cases where the indications for operative interference are not well defined must be studied from day to day in their minutest detail. Here the keen appreciation of the personal judgment of the surgeon that comes from an adequate clinical experience is, to my mind, the most important factor in determining whether or not the patient should be operated upon. A laboratory diagnosis may be very helpful. It should be made by one whose technic is free from error, else it may be worse than useless. It is exceedingly important to constantly keep in mind that intracranial complications of purulent otitis media may occur other than by way of the mastoid cells. As, for instance, the tegmen tympani—or it may be by way of the circulation. As good drainage is essential to the prompt cure of an acute otitis media, an early mastoid operation, even in doubtful cases, has the advantage of checking further destruction by the disease of the middle ear structures by establishing posterior drainage, and at the same time permits the surgeon to make sure of his ground from the viewpoint of the mastoid cavity. Having had several disagreeable experiences in cases of brain, meningeal and sinus involvement following acute suppuration of the middle ear with associated mastoiditis, without mastoid symptoms, I am strongly disposed to agree with Whiting, Jackson and others, who contend for early, and, it may be, unnecessary operation, rather than assume the responsibility of a possible development of a dangerous complication as the result of an over conservative attitude.

Dr. Edw. Gray, Eldridge: The first case of mastoid disease which I ever saw was in the year 1875. At that time you are aware the state of medical education was quite different from what it now is; and it was because of the occurrence and the presenting before me of a case of fatal mastoid disease in the person of a girl 16 years of age, taken into the hospital, and the evident helplessness of the hospital force in fighting it that led me to go to the city of Vienna and there study diseases of the ear, nose and throat. I will not worry you with the history of that case, suffice it to say that it was a case of neglected ear-disease following measles in childhood. The otorrhea had been running on for a period of perhaps ten years, and I at the time was senior assistant in the Presbyterian Hospital in the city of New York, and I was sent down to the tenement district to examine this case to see if it were a proper one to enter the hospital, because evidently the suspicion of the authorities was that it might be a case of cerebro-spinal meningitis. The symptoms were cerebral. The girl was taken into the hospital and after a variable history over something like ten days finally died with symptoms that resembled apoplexy more than anything else. A post mortem was secured. The tegmen tympani was thoroughly disorganized, blackened, and the orifice through which the pus, etc., had made its way was clearly defined, and the portion of the cerebral meninges which had thereby been irritated and formed an abscess of the brain was clearly demarcated.

After returning from Vienna and coming back to this, my native, state and entering into practice it was a long time before I encountered another case. I refer to this because it was a singular case. There has not been a single reference in all that has been said this afternoon to the conditions that case presented. It was evidently a case of acute purulent otitis media, with mastoid complications. At the time I was called it was only because the patient had been under the care of another practitioner who was, by the way, a medical officer in the United

States army, and I am sorry to say he was one of the very infrequent class in the army who sometimes went off on a spree, and because he was incapacitated I was called. I found the patient was treated simply for neuralgia for something like three weeks, and yet it was a case of acute mastoiditis, which any one who knew the symptoms could recognize. I immediately explained to the family the necessity of operation, and how much more difficult that was in those days. Of course they wanted consultation. The consultant was friendly and told them they were losing valuable time. He told me, "I don't know anything about it. If you do, go ahead." I went ahead and removed some fifty minims or more of pus and the patient recovered with no untoward symptoms so far as hearing was concerned, but with the complication of an abscess burrowing down the sterno-mastoid. The patient finally recovered and is alive to-day. He has said to me that that was the worst thing I ever did for him, for he ought to have been allowed to die, and the community thought so, too.

Chairman Roberts: Where did you open, doctor, the mastoid?

Dr. Gray: Yes, sir, the mastoid, with a drill.

Dr. Geo. A. Hare, Fresno: I have been exceedingly interested in the papers presented to us, and was particularly impressed by some of the thoughts in the last paper read. I want to compliment the doctor in presenting his paper in so succinct a manner and on the force and logic with which he summed up his thoughts. I wish to criticize in the most friendly manner. I am not in this line of work, but in my earlier years I was in throat and ear work. I speak from the standpoint of the general practitioner to-day, and it is therefore with some diffidence that I make the suggestion as to the use of cold. I hardly agree with the essayist as to the use of cold, that it masks the symptoms and causes paralysis, or at least a measure of benumbing of the tissues to such a degree as to often give us untoward results, but I believe that will invariably be obviated if the cold is used as it ought to be used, and I wish to make that point with emphasis. If a cold application is placed upon any inflamed surface we control that inflammation, I believe, better than by any other temporizing method. But if it is permitted to remain long enough will cause a vaso-motor paralysis and will increase the very thing we are trying to decrease. I believe it does effect all the deeper tissues of the body. The blood supply is controlled by conditions affecting the cutaneous surface. You place heat upon the surface and the blood supply to the deeper tissues will be increased, and if you apply cold the blood supply to the deeper tissues will be diminished. But if that cold is maintained the blood vessels are paralyzed and you get a hyperemia that you do not want. I invariably follow the rule either in an appendicitis or a mastoid complication, where beginning inflammation occurs, if I can have access to cold, keep it on forty or fifty minutes and then apply a hot compress for five minutes, renew the cold again, and thus maintain the sensibility of the skin permanently, and I can do more by cold than by any other means I have ever seen in the control of inflammation. I have no hesitation in advocating it very strenuously, and commend it to you, for I believe we often neglect the most conservative method of treatment at our disposal because we get these untoward results which can be obviated.

Dr. F. L. Rogers, Long Beach: I wish to refer briefly to a phase of the etiology of acute inflammation of the middle ear, which has been touched upon by two or three of the papers read, i. e., that adenoid growths are a frequent, perhaps the most frequent cause either directly or indirectly, of acute otitis media in children, and to emphasize what has

been said relative to their early removal. When I was a student the teaching was, that the operation should be postponed until the child had reached seven or eight years of age, in order to give nature a chance to "absorb the growths." But when I had a little experience of my own, I found as others have, that once the third tonsil is hypertrophied in a vast majority of cases, it remains so, and the sooner the obstruction is removed the better for the child. And the age of the child cuts little or no figure. These children are nearly all anemic and badly nourished and if they live to reach school age are found markedly below par in mental and physical development. They are mouth breathers, and from disuse the nasal passages and dental arch fail to expand normally. This leaves the child more or less permanently crippled and deformed and unless the post-nasal obstructions are removed early in the developmental period of his life these deformities remain a permanent handicap. The adenoid operation, if properly performed, is a bloody and shocking procedure, and in my opinion is rarely done with thoroughness unless under a general anesthetic. I regard the operation without general anesthesia both dangerous and barbarous, and rarely thoroughly executed when undertaken in that way. To do the operation well, considerable skill and great care is necessary, and a digital examination of the field of operation should always be made after the curettement. Particularly would I call attention to the difficulty of reaching Rosemüller's fossae and the field around about the orifices of the eustachian tubes and the lateral walls of the pharynx, with the Gottstein curette. For this supplemental work I have found a good instrument in the curette devised by Byington of Battle Creek, and made by F. A. Hardy & Co., with a long slender loop blade and a double cutting edge, placed horizontally. I never consider an operation complete until I use my long straight-handled curette through the nose, my finger at the same time in the naso-pharynx as a guide to remove any small excrescences on the lateral walls of the posterior nares, or small vegetations on the turbinates. In fifteen years I do not remember to have had to operate the second time on a case where these precautions were all taken and a general anesthetic was used.

Dr. Joseph Jackson, Pasadena: I want to call attention again to the point of using heat and cold for stopping inflammation. Isn't the reason for using either to stop a bacterial growth, and cause a temperature of such a degree that the bacteria can not develop? Isn't it more than a greater or less blood supply to the part? I like cold in the beginning of inflammatory processes, and use it for that reason, that the streptococci or staphylococci, or whatever the organism present may be, cannot develop except at a certain temperature. Then again, if the vessels be paralyzed, isn't paralysis equally favored by heat and cold? Then again, is paralysis of the vessels objectionable? Do we not wish to cause or favor a hyperemia? Doesn't the hyperemia help to remove the lesion produced by bacterial action? Isn't the checking of the growth of bacteria the main indication for using either heat or cold?

Dr. K. Pischel, San Francisco: It has been pointed out before that the family physician should examine or have examined a child's ear in every case of fever where we can not find any other explanation. In this connection I wish to call attention to a symptom which Sanford Blum called attention to last year. It has been mentioned in some of the text-books, but has not been brought generally to our attention. It is the sensitiveness to pressure behind the jaw. When examining a baby you can easily try it. While I perfectly agree that we should make microscopic examinations of the discharge from the ear, I do not think we are far enough advanced to decide about the seriousness of the infection. We find frequently

that streptococcus infection leads to serious troubles, while a pure streptococcus infection may after paracentesis pass off after a day or so.

As to the closing sentence of the last essayist, "Few cases of acute mastoiditis should have the operation fail, and I am confident they will not if operated on early enough," I take exception to that statement. I think there are acute infections which go so quickly that we can not possibly make the diagnosis quick enough—that a general infection takes place too quickly. Secondly, "In mastoid work a competent person can only do good, and never do harm," which was stated at the reading of the same paper in San Francisco the other day. I will have to take exception to that, too. We can do harm. Even the competent surgeon can do harm. In mastoid work we have to resort to general anesthesia, and there is no doubt in my mind that we have many deaths after a general anesthesia which formerly we did not account for. The last few years a number of cases have been reported of death three, four or five days after general anesthesia. That can happen in mastoid as well as in abdominal work, and I am sorry to say I have had some experience about it.

A Member: I should like to ask whether with chloroform or with ether?

Dr. Pischel: According to a paper read by a Chicagoan, Dr. Bevan, if I am not mistaken, at the Portland meeting, chloroform is the more dangerous, but ether can cause acute affections of the kidney three or four days afterward.

A Member: I am asking whether your experience was with chloroform or with ether?

Dr. Pischel: Happily, I have had but one case with chloroform, but according to Bevan with ether such unfortunate effects can happen.

Dr. H. G. Thomas, Oakland: I think, going back to the root of the matter, too much stress can not be laid on the diagnosis of adenoids in infants. This is not done often enough. The specialists do not see them frequently. The general practitioners do not look for them. I have been taught by the specialists to do it. We can only agree and lay emphasis on the fact that every case of snuffles we see is dead sure adenoids, in infants. Dr. Stephens has brought out a lack of air as the cause. If you will go back to your obstetric days you will remember the stuffy room, with the lack of fresh air and the swaddling of the child in heavy wraps, and completely covering it from the air, and the development of adenoids after birth is perhaps due to lack of air rather than to the food.

Coming down to the last paper, it is good to have something to kick at. We all take issue with Dr. Welty in the matter of cold. My friends the specialists, as well as the general practitioners, will all agree that in acute otitis media beginning with the earache thousands of cases have been aborted by cold. My custom is to put on the bag or coil, keep it on thirty minutes and take it off, and put it on again. In that way we apply cold not only to the mastoid but to the points in front and under the ear which control the blood supply to the middle ear. In that way I have seen very acute earache controlled in thirty minutes, with no return. I think the heat furnishes a number of cases that Dr. Welty otherwise would not get, and the Leiter coil has saved the specialist many a piece of work.

Dr. A. C. Rogers, Los Angeles: Leave off the cold, simply use the Politzer bag and nine times out of ten your earache will disappear and not return.

Dr. Fred Baker, San Diego: I want to emphasize one or two points. We have had the question of radical operation for adenoids mentioned by Dr. Rogers and I fully concur in what he said, but he speaks of the curettes and their inefficiency. I think it has been the experience of every one who operates that the use of the curette is unsatisfactory if the operation terminates at that point. I thoroughly be-

lieve the best instrument for operation on adenoids is the finger nail. Of course, it must be rendered as aseptic as possible, but I do not believe any operation is satisfactorily done unless you examine with the finger to see what is done, and I do not believe the Gottstein curette or anything else will clean out the cavity so that the adenoid will not return. I am of the opinion—I do not think my experience is wide enough to state it positively—that in the removal of adenoids a second operation is necessary only where adenoids are left after operation. I believe if you go in with the finger nail and clean out the cavity as well as you can you will have few cases of recurrence of the adenoids. In this connection I wish to call attention to a method of procedure I have never seen mentioned or noted before. It is original as far as my own experience is concerned. On one occasion in cleaning the finger nail I pared down the inner surface until I had produced a chisel edge, and I was surprised at the facility with which I could remove the tissue; I am tempted to try the complete operation in this way. I want to protest against the removal of the tonsils and adenoids in the same operation. I have seen it done a number of times and I have done it myself twice. In both of these instances, owing to the fact that the hemorrhage is considerable, and it is impossible to continue the anesthetic, I did an imperfect operation. I believe the removal of the adenoids is the most important and the tonsils can be removed afterward. The operation should be divided and the tonsils removed either before or afterwards. Take plenty of time and use general anesthesia every time, if it is possible, and you will generally prevent all recurrences. Just a word more. I think Dr. Welty, by an inadvertence, made a mistake in his statement, or rather, he was not full enough. I am a believer in both cold and hot applications, and as Dr. Hare said, alternation is a most excellent procedure. I alternate them, but believe both are beneficial. But the point I wish to make is that in putting on the application hot he does not say anything about keeping it hot, except to mention that by the external application of something the dressing can be kept hot. I think if we put on a wet dressing it is imperative that it should be kept hot. We know that if we macerate the tissues with a warm application we have applied a poultice, and we know that bacteria grow under a poultice more than under any other condition, and if we are going to put a poultice on we had better not. I was told in the beginning that we should not poultice an eye or an ear, and I think probably it was an inadvertence on the part of Dr. Welty. I believe such treatment would result in damage.

Dr. E. C. Sewall, San Francisco: In speaking of the removal of tonsils and adenoids as a prophylactic measure in ear trouble, I wish to say a word in regard to using an anesthetic especially in removing the tonsils. It is my point of view that when we remove the tonsils we must remove them in their entirety; that is to say, the tonsil must first be entirely cleared from the pillars anteriorly and posteriorly, and then from the superior constrictor, and removed, preferably, by the cold snare. It has become the custom of late years in the removal of tonsils, especially in children, to send them to the hospital, administer a general anesthetic and remove the tonsils, and at the same time, I believe, the adenoids. I wish to insist that the tonsils must be removed in their entirety, but I believe it is possible in the great majority of cases to remove the tonsils, in children even, under the use of a local anesthetic. I began some months ago because of the great objection to using a general anesthetic, even ether, in children who have throats filled up with tonsils and adenoids. We have all had the experience where children have become cyanotic, and have come very near death, we might say, from the use of a general

anesthetic. For that reason I began first injecting cocaine directly by the use of a hypodermic syringe into the tonsils. After using that a short time I changed it to eucaïne, and have since used a solution of half per cent strength, and one per cent in removing one tonsil. Since using this I have removed them in sixty cases in the last five months, the ages running from five years to adults. In some five-year-old children only one tonsil was removed at a time, and they returned after a few weeks to have the other one removed, which shows that the pain was not great.

Dr. Wright, Altadena: I wish to report one case that bears on the point as to whether a mastoid case operated soon enough will ever die. I know of one case operated within thirty-six hours in which a thrombus of the jugular vein was found, followed by a leptomeningitis in six hours after the first symptoms came on.

A Member: You didn't operate early enough.

Dr. Wright: Well, how early should we operate? That is what I want to find out.

A Member: Before the thrombus forms. (Laughter.)

Dr. F. D. Bullard, Los Angeles: From my personal experience the best way is to pass the eustachian catheter. Having twice had otitis media my colleague, Ellis, inflated the ear and all the symptoms disappeared, and I urge your attention to early inflation.

A Member: Do you apply that to children?

Dr. F. D. Bullard: I don't know that you could apply the catheter, but Politzerization would be possible. Another thing is to urge upon the general practitioners to send their children to the specialist to have their adenoids taken care of. Not long since a physician in Los Angeles sent his child to me for an error in refraction, and I called his attention to the fact that the child had adenoids. He had not recognized it, although he is a competent physician. Now I believe we should go around and have the doctors all in and lined up first.

Dr. Geo. A. Hare, Fresno: I wish simply to ask as to the relative danger of the use of the Politzer bag in acute earache—if that is a routine practice in the treatment of children with earache? I should like to hear from those advocating it.

Dr. William Simpson, San Jose: I would like to say in regard to the use of the Politzer bag that I have been using it for twenty-five years and I have never seen any trouble from it. In many cases I think it is the very first thing to do. But there is just one point I would like to make in that connection, and that is that we are making a tremendous mistake in discussing these questions among ourselves as specialists; that to do good this discussion ought to take place when the general practitioner is present, for I am sure there is not a man in this room but knows that a campaign of education ought to be conducted on this line for the benefit of the general practitioner. The difficulty comes from the fact that they hang on to these cases just as long as possible, and send them to us so late that it is almost impossible for us to do a bit of good. I heard a lot here this morning as to a campaign of education on the milk question, and on various other questions; if there is any question on which a campaign of education should be conducted, it is "that the general practitioner does not know everything about eyes and ears." But until we get to that point you might just as well take your chance, and when they come to you do the best you can.

Chairman Roberts: I will say in reply that this is supposed to be a meeting for the general practitioner and not for the specialists.

Dr. William Simpson: I am glad if some of them heard what I have said.

Dr. R. L. Doig, San Diego: Doctor, the remarks

you have just made make unnecessary much of what I wished to say. Watching the work of specialists for the past ten years, the results have been so impressive, so astonishingly beneficial in many cases, that I am anxious the general practitioner should be educated as to its importance. During the first fifteen years of my practice I was practically ignorant of this work and its results. Two years ago I presented a paper at Riverside from the standpoint of the general practitioner. Very much to my disappointment I read it before a lot of specialists who knew more about it than I. That was not what I wanted to do, and the effect of the paper was lost. Another thing I would urge, and that is the directing of the attention of the dentists to this matter. In that paper I said that one of the best papers I had heard was a dental paper, in my town, on this subject, but I have reason to feel that dentists in general do not appreciate it. Just the other day a little girl, probably fourteen years of age, moved into a house adjoining mine. She is one of those rather pretty girls, spoiled by prominent front teeth. She has a pretty voice and would sing well if she had proper respiration. I called the attention of her mother to these prominent teeth, and she said, "Yes, it is a case where she sucked her thumbs, and the dentist said, as long as she did, he could not do anything for it." I called her attention to the fact that it was because she could not breathe through her nose. She said she had never heard of adenoids and the dentist assured her that the trouble all come from the child sucking her thumb.

Dr. F. L. Rogers, Long Beach: Inasmuch as this is a general practitioner's, as well as a specialist's meeting, I feel that the remarks of Dr. Simpson should be commented upon, particularly in reference to the use of the Politzer bag in acute otitis media. I do not believe this section wants to go on record as favoring indiscriminate, or even routine Politzerization for this condition. The doctor stated, whether as a matter of inadvertence or not, that the first thing that should be done in a case of acute otitis media is the use of the Politzer bag.

Dr. William Simpson: I did not say in every case; I said often it was the first thing to be done.

Dr. F. L. Rogers: I can not agree with the statement even with that qualification, for in my opinion, the first thing indicated in acute otitis media is to cleanse, and as far as possible to sterilize the nasopharynx as well as the external auditory canal, with hot saline antiseptic solutions. This in itself depletes the tissues and relieves the tension, and may be sufficient to permit the entrance of air by natural means. If this fails then use a Politzer bag early, but with extreme caution. I thoroughly agree with the gentleman who said that the use of the eustachian catheter, even in children, is the most satisfactory way to inflate the middle ear. Only yesterday I used it for a child four and a half years old. A small amount of one per cent cocaine solution was used first; and the child made but little complaint, and the results were very satisfactory, both as to pain relief and improvement in hearing.

Dr. William Barclay Stephens, San Francisco: With reference to the use of the Politzer bag, which really comes within the province of my paper, I believe I stated there that I sometimes use it in acute cases which are simply the result of acute congestion of the throat and without infection, having previously cleansed the throat. I should like to say in conjunction with my own paper that I do not want to leave a wrong impression as to employing only a simple puncture of the membrana tympani. It is only in those cases of acute congestion. In other cases where there is pus, or sero-pus, or where we suspect there is any infection, I believe in thorough incision of the membrana about the posterior inferior third. Then where the attic is involved and

we suspect there is involvement of the antrum I use a Graeffe knife, extending up into the attic wall, and if tender over the mastoid I cut out through the canal, making a modified Weil's incision.

Dr. Cullen F. Welty, San Francisco: Dr. Stevens recommended a puncture of the drum membrane which I wish to criticize very much. The only condition in which a puncture should be done is in myringitis. Otherwise always a free incision of the drum membrane and not extending into the canal, because you open a field that may produce perichondritis; I know of such a case. I believe that all cases of acute purulent otitis media not dependent upon infectious diseases should have their tonsils and adenoids, particularly their adenoids, removed at once, as they are the predisposing factor in so many cases, and if not removed the ear may continue to discharge indefinitely, or the hearing, be more or less seriously impaired. No doubt all of you have seen such cases. If there ever was an indication for removal of the tonsils and adenoids, this should be considered one of the greatest importance. Over treatment of the naso-pharynx in acute infectious diseases I believe is responsible for many cases of purulent otitis media. I should not recommend more than two or three treatments per day, and of the mildest form that can be applied. I sometimes doubt the advisability of any interference. When the tonsils are seriously infected it may do some good. Politzerization in acute otitis media is the thing par excellence. Politzerization in acute purulent otitis media does not do any good, nor does it any harm. Many ear men have contended that the pus was blown into the mastoid cells. If you only recall pathology you will remember that the tympanic cavity and mastoid cells are infected primarily in this disease. Some recommend Politzerization two or three days following a free incision of the drum membrane, in order to forcibly blow some of the pus from the tube and tympanic cavity. In this condition it is also stated that a mastoiditis may be produced, which is entirely wrong, as I have stated before. I do not believe Politzerization does much good at all, because the tube enters about the center of the cavity, and that pus below the center will remain. The question of a bandage in acute otitis media has not been spoken of; I wish to recommend it, and insist that you are not doing your best when you allow your patients to go without it. As a physician or surgeon, would you allow your patient to go about with an inflamed part without protecting the same? And I say a piece of cotton put into the ear is not sufficient protection. The only criticism I have to make on Dr. Hastings' paper is that it is not sufficiently complete. The question of heat and cold in acute purulent otitis media has been discussed for the last ten years by ear surgeons, and when I say that most of them have discarded the cold in preference to the heat you must accept it as such. I remember very well a case of acute otitis media that terminated fatally, was treated by the Leiter coil with ice water. This made such an impression on me that I will never forget it. The symptoms were so masked by the use of the coil that another case was sacrificed to science. I believe in hot applications because they have served me well. As I have said in my paper, after a free incision of the drum membrane, put on a hot solution, and if your patient is not improved in twenty-four hours the most conservative procedure is that of operation. In connection with the use of heat, Dr. Thomas says I will increase my cases for operation. This has not been so, as I have had but two cases of acute purulent otitis media that I have seen from the acute condition to increase in severity and demand operation. I most heartily recommend hot applications, and will say, if you use it in ten cases as I have advised, I am confident you will never use cold again. Dr.

Pischel takes exception to my statement, "that a competent man can only do good in mastoid surgery." I will answer this by saying that I have never seen the facial nerve cut. I have seen the dura uncovered and punctured, if you please, the sinus uncovered and accidentally opened, but I have never seen a serious complication nor a complication of any kind, as the direct result of the operation. I have seen acute cases of mastoiditis die because they have not been operated upon early enough, but from no other reason. The deaths that come from anesthesia have nothing to do with the operation at all. That is entirely foreign to the subject. In a two years' service in the Politzer Clinic, there were about forty-five deaths. The lesions were always found to be in the brain or its membranes and from delayed operation in either the acute or the chronic condition. One gentleman spoke of a fatal case on the third day from cerebral complications. This again illustrates the very points that I have tried to emphasize. I am confident that had this case been examined carefully, and conditions looked for that I have spoken of, the case would not have been sacrificed.

PLAGUE.

Being a translation of the Fourth Chapter of "La Pathologie Exotique," by Professor A. Le Dantec of the Faculty of Medicine, Bordeaux.

Translated for the State Journal by Dr. W. C. RUCKER, P. A. Surgeon, U. S. P. H. and M. H. S.

(Note.—In sending the manuscript, Dr. Rucker writes as follows: "I am sending you herewith a translation of the fourth chapter of Le Dantec's 'La Pathologie Exotique.' This is not a finished production inasmuch as it is the product of the few moments of recreation which have been allowed me in the past few months. It contains so much of interest, especially to the physicians of California, and is in such agreeable style that it seems to merit publication in your journal." It is indeed a most valuable contribution to the subject of plague and therefore no apology is made for its length; it should be carefully studied by every physician in this state. Ed.)

Synonyms: Bubonic plague; peste a bubons; typhus of the Orient; levantine fever; pest; in Chinese Yang-tse or lao-chow-ping (disease of rats).

From the bacteriological viewpoint, plague should be considered as a true septicaemia caused by a specific *cocco-bacillus*. From the clinical viewpoint, it is a febrile disease characterized by a most pronounced typhoid state and by the development of buboes, carbuncles and petechiae.

History.

1. The Plagues of the Ancients. The ancients called all the diseases, which affected them in epidemics and caused a considerable mortality, plague. The disease, which raged at Athens in 430 and which is known in history by the name of "the plague of Athens," was not true plague. It is the same as the plague of Antonin, which ravaged Europe and Asia at the time of Marcus Aurelius (166 B. C.), and of the plague of Carthage which attacked Egypt, the coast of Africa, Italy and Greece from 255 to 265 and which has been so well described by St. Cyprien. These three epidemics or plagues called by the ancient word seem to have all been the same affection, which, according to Littré, seems to have disappeared from the surface of the globe as its symptoms are not like any other disease which exists to-day.

2. The True Plague of the Ancients. The true plague seems to have been known in Egypt before

the Christian era. A manuscript of Oribase, dating from 200 to 300 years before Christ, speaks of a disease characterized by a violent fever, pains, and an eruption of large, hard buboes.

3. The Plague from the Christian Era to Our Days. The first epidemic of plague which has been registered in an authentic manner is known under the name, "Plague of Justinian" (542). It has been described by Evagrius and Procope. Starting at Peluse, on the delta of the Nile, one flank of it penetrated Persia while the other ravaged all the seaboard of the Mediterranean.

The greatest epidemic which has been let loose upon humanity is the plague known in history as the black pest. It left China about 1334, and marching from East to West it invaded successively, India, Persia, Russia, Germany, France, Italy, Spain, and finally England and Norway (1347-1351). This epidemic carried off twenty-five millions of the inhabitants of Europe, which at that time amounted to one hundred and five millions. Pope Clement VI, who made a vast inquiry into the ravages caused by the scourge, fixed the figures of the deaths caused in the entire world at 42,836,486. Also what a profound impression this epidemic left on all the writings of the period. They accused the Jews of having poisoned the wells, using therefor a mixture composed of spider webs, the blood of the buboes and animal poisons. This accusation served for a pretext for those terrible persecutions, which cost the lives of thousands of the Israelites. This plague of the fourteenth century was the beginning of the rule of quarantine. The disease perpetuated itself in an endemic state in Europe up to the sixteenth century, when it yielded its place to typhus and typhoid fever, it being thought that it divided itself to create these two diseases (Nully).

During the seventeenth century one notes first, the plague of Marseilles (1720); the plague of Messina (1743), and finally the plague of Moscow (1770).

The plague of Marseilles has remained celebrated in history because of the self-sacrifice which was displayed by Bishop Bulzunce during the time of the epidemic.

At the end of the eighteenth century and the beginning of the nineteenth, Egypt was a permanent focus of plague. From 1783 to 1844, twenty-one epidemics occurred. Of these we are more interested, from a historic point of view, in the epidemic of 1799, which caused the death of two thousand men of the French army in Egypt and Syria at the siege of St. Jean d'Acre (Desgenettes). This succession of epidemics in Egypt made it believed that this country was the original focus of the disease, and the search for the explanation brought forth many theories, the most seductive of which were the theories of the three deltas and the theory of Pariset.

The theory of the three deltas gives for a focus of origin of each pestilential disease, the delta of a great river.

1. The delta of the Nile (plague);
2. The delta of the Ganges (cholera);
3. The delta of the Mississippi (yellow fever).

The theory of Pariset blames the existence of plague in Egypt to the changes which have been produced by the civilization of that country. During all the period of antiquity in which the Egyptians embalmed or salted their cadavers to preserve them, there occurred no epidemic of plague but when these practices were abandoned it raged.

Reckoning from 1850, it seemed that plague was going to be relegated to the domain of history, but in 1878-1879 the epidemic of Wetlianka knocked at the doors of Russia. But this is not what makes one alert, it is by way of the sea that plague penetrates Europe.

The endemic focus of Yunnan awoke sharply in

1894, and began its irradiations to Canton and Hongkong, reaching Bombay in 1896, where it formed a great secondary focus. Beginning from this point the epidemic transported itself a little bit everywhere; Mauritius, 1899; La Réunion, 1899; Tamatooe, 1898-1899; Australia and New Caledonia.

Egypt has been fortunate. Europe, however, was not free from these incursions. Oporto was severely stricken, and London and Marseilles succeeded in smothering the epidemic in the ships and hospitals. In the meantime, quite recently (August, 1903) plague was landed in the suburbs of Marseilles with a cargo of rags for the pasteboard manufactory of St. Barnaby. The rags proved to be from Bombay. Fortunately, the epidemic was quickly checked, for, as we shall see in the following, we actually have at our disposition the efficacious means of protecting ourselves against the terrible scourge.

At present the plague is making an extraordinary expansion lit up by the South African war. The direct relations between India and the Cape of Good Hope multiplied this, and plague debarked many times in South Africa.

The epidemic finally, by crossing the Atlantic, attacked for the first time Argentine, Paraguay, Brazil, etc. One sees by this simple enumeration how much the plague has seized in an offensive movement covering a dozen years.

4. Laboratory Epidemics. It is not only the sides of ships that bear the epidemics of plague, occasionally culture tubes, handled imprudently, spread the plague virus in the laboratory and give rise to local epidemics. It was thus that two laboratory directors were killed, the one in Vienna, the other in Berlin, victims of their imprudence. The laboratory of Nha-Trong has been wrongly accused of having spread the plague in the neighboring villages. Yersin has demonstrated that the disease was imported into the country by the Chinese junks going between Canton and Pakhoi.

Foci of Plague.

The original foci of plague seem to be situated in the massive mountains at the north of India and at the southwest of China, principally at Guhrwal and Yunnan, but the various epidemics of plague which have ravaged the world have left in their wake secondary foci, where the disease breaks out from time to time.

We must consider, then, two kinds of foci; the primary foci and the secondary foci.

1. Primary Foci. (a) Indian Foci. The Indian foci are two in number: first, Guhrwal; second, Pali; separated from one another by seven or eight hundred miles of intervening country which does not present a single case of plague. Guhrwal appears to be the primary focus of plague in India, while Pali seems rather to be a secondary focus. The plague in Pali presents one peculiarity worthy of note; it is frequently accompanied by hemoptysis and inflammation of the lungs. These complications were especially noted in the black plague of the fourteenth century.

The plague which blazed forth in Bombay in 1896 and which is not yet extinguished seems to have been imported by a vessel coming from China loaded with infected merchandise. The epidemic commenced in the quarter Mazagon, near the docks and harbor.

(b) Chinese Focus. The province of Yunnan is a permanent plague focus, which constantly menaces China and Tonkin. China is constantly invaded from Pakhoi and Lieuchu. In 1894, plague was carried from Pakhoi to Canton, where it had 180,000 victims; next at Victoria, capital of Hongkong, it carried off 12,000 Chinese in the native quarter. The disease was preceded by a great mortality of rats and mice. It was during the epidemic

of Hongkong that Yersin discovered the pathogenic microbe of plague.

2. Secondary Foci. (a) Tripoli. Plague made its appearance in 1856 in the Arab tribes near Bengazi, and lasted three years. In 1876 a new epidemic occurred at Cyrenaique.

(b) Assyria. Assyria is a mountainous district situated at the south of Hedjaz and Arabia. Its proximity to Mecca causes the fear of the propagation of plague among the Mohammedan pilgrims, who serve as agents for its dissemination to all parts of the world.

(c) Irak-Arabi. This is the ancient Mesopotamia of the Greeks and the Al Djezireh of the Arabs. This province contains two sacred cities, Kerbela and Nedjef, where the tomb of Allah is situated and where the natives take their cadavers for interment. In 1874, after the famine which devastated Persia, there were 12,202 cadavers transported from Persia to Mesopotamia (Reclus). According to Tholasan, Mesopotamia always presents certain sporadic cases of plague regardless of an epidemic. It was from this focus that plague invaded Persia in 1877, next Rescht and finally Astrakhan and Wetlianka (the plague of Wetlianka, 1878-1879). Europe was preserved from the scourge owing to the energetic measures taken by Count Louis Melikoff, who surrounded the stricken localities by a triple sanitary cordon and burned the effects and the houses of the infected. Recently, in 1898, plague appeared at Anzab (Turkish Russia). The sanitary measures taken by the Russian government were again successful in stamping out the scourge.

(d) Uganda. This is a province of English East Africa, situated below the equator, between Lake Albert and Lake Victoria. This focus has been described recently by Koch, who sent a German physician, Zupitza, who confirmed by his microscopic researches the diagnosis made by the missionaries of Uganda. When they actually connect Lake Victoria with Mombasa on the Indian ocean as a line of travel as the English sought a communication between Uganda and the Nile in their last campaign against the Dervishes, this new African focus of plague should be considered a danger to Europe.

3. Bacteriology of Human Plague. (1) Priority of the Discovery of the Plague Bacillus. It is generally believed in France and Europe the specific microbe of plague was discovered simultaneously by Kitasato and Yersin during the epidemic of Hongkong in 1894. The communication of Kitasato was made on July 7, 1894, while that of Yersin was made on the 30th of July of the same year. It seems logical to conclude that the honor of the discovery belongs by right to the Japanese scientist. That is not the case, however, for the two authors have described a different microbe, and it is to-day proven that the bacillus of Yersin is truly the specific microbe.

If the truth has taken so many years to come to light, it is because it was thought for a long time that the two authors had studied the same microbe and that which contributed much to the continuation of the error in medical opinion is the fact that in the extreme Occident we possessed only the cultures of the bacillus of Yersin, while in the extreme Orient the Japanese scientists worked with cultures of the bacillus of Kitasato. The light has little by little cleared up this point in the bacteriological history of plague, thus resulting in the publication of a work, in the "Archives of Naval Medicine," by a physician in the Japanese navy, Dr. Tatsusbaro Yabe. We render homage to the scientific honesty of our Japanese colleague, who acknowledges with great sincerity the error of his scientific compatriot.

Kitasato has determined from the underlying principle of many diseases that when there is a polymicrobial local infection the general circulation is

not invaded by the specific microbe. Kitasato chose the blood for isolating the specific microbe, thinking that since the pus of the buboes was polymicrobial the blood only contained the microbe in pure culture. But what is true of one disease is not always true of another, and it was found that the microbe isolated from the blood of plague patients by Kitasato is not the true specific organism but really a microbe of secondary infection.

Yersin took as a point of departure for his researches an altogether different principle. The characteristic lesion of plague being the bubo, it is in the bubo that one should find the specific microbe. He isolated therefrom the true micro-organism of plague.

To make it easier to realize the error into which Kitasato has fallen, and to give justice to the view of Yersin, let us take as an example a well-known microbial disease, diphtheria. In diphtheria the characteristic lesion is the false membrane, and it is there that one finds the microbe of Laeffler, which multiplies locally without generalizing itself, but in certain mortal cases of diphtheria one finds in the blood a secondary microbe, the streptococcus. Kitasato addressed himself to the blood for isolating the specific organism and recovered a secondary organism. It is well to make known these scientific errors in order to avoid their repetition.

The two organisms offer characteristics so totally different that their differentiation does not offer the slightest difficulty. Here are some of the characters, which enable one to distinguish between them at first glance:

Bacillus of Yersin.

1. Immobile;
2. Does not take Gram's;
3. Does not take milk;
4. Does not cloud bouillon and forms clumps on the sides of the tube.

Bacillus of Kitasato.

1. Mobile;
2. Takes Gram's;
3. Coagulates milk;
4. Clouds bouillon.

In the plague of the extreme Orient the bacillus of Yersin and that of Kitasato live side by side, and as noted by Aayama the bacillus of Yersin predominates in the glands while that of Kitasato predominates in the blood. It is not the same in the plague of other regions. Thus, in India, the plague is pure—that is to say, without microbial association. We have ascertained the same purity of the plague at Reunion in a number of smears which our comrade, Dr. Vassal, has obligingly furnished us with (pus from the glands, blood, kidneys, etc.).

It remains to determine the exact nature of the microbe of Kitasato. Is it a streptococcus as according to the view of Aayama? Is it a variety of the pneumococcus as is thought by Tatsusaburo? Is it a variation of the bacillus studied only by Kitasato? Everyone with good reason knows that it cannot be said that the secondary infection is always caused by the same organism. On the contrary, the specific infection is always the same; it is due to a bacillus, which has been apparently without contest by Dr. Yersin.

(2) Isolation of the *B. Pestis* from Human Pathological Products. For the study of the morphology, the staining and the culture of the pest bacillus, also its action on various animals, it is necessary first to procure a pure culture of the bacillus of Yersin. In man one recovers the plague bacillus:

- (a) From the gland in the bubonic form;
- (b) From the sputum in the pneumonic form;
- (c) From the blood in the septicemic form.

From the Gland. One withdraws by means of a

Provatz syringe a little of the serum or pus from the parenchyma of the gland, or one may make a little puncture with a bistoury and draw out the glandular serum with a Pasteur pipette. One spreads this serum upon the surface of a tube or plate of agar, and leaves the tube or plate at room temperature of from 15° to 18° Centigrade. The colonies upon agar are white and small. Their center becomes opaque and yellowish. One assures himself that these are plague colonies by the negative coloration by Gram's method, by the culture on bouillon and by inoculation into guinea pigs from which in a moment we determine the peculiarities. One has thus a pure culture of the bacillus of Yersin. It is wise to isolate first of all on agar and not directly into the bouillon, for the gland does not always contain the plague bacillus in a pure state. When suppuration has been well established it contains many staphylococci and few pest bacilli.

In the Sputum.—It is especially in the pneumonic form that one should address himself to the sputum to isolate the pest bacillus. One chooses if possible a sanguinolent sputum and subjects it to the same manipulations as with the serum or the pus from the buboes. It contains the plague bacilli in great abundance.

In the Blood.—The bacillus of plague is absent from the blood at the beginning of the disease and it remains absent except in rare cases of great severity but if the disease takes on a grave aspect it is indicated by the bacilli making their appearance in the systemic circulation. In all fatal cases one finds the plague bacilli in the blood twenty-four hours before death. We have here an analogy to the conditions found in man in malignant pustule. The bacillus of anthrax is first localized in the vicinity of the pustule and finally invades the circulatory system and produces death.

Calvert in Manila has sought to discover at what moment one finds the bacillus of plague in the blood in fatal cases. In thirty-two cases he found the bacillus of plague in the blood:

In one case, 120 hours before death.

In two cases, 96 hours before death.

In five cases, 72 hours before death.

In seven cases, 48 hours before death.

In the thirty-two cases, 24 hours before death.

Calvert has been able to follow step by step the evolution of the septicemia by examining smears from the blood; at the time of the beginning one never sees more than a few bacilli, sometimes but a single one, twenty-four hours later their number is increased very considerably and the blood becomes transformed into a veritable "purée of microbes" at a more advanced stage of the disease (Besredka).

The presence of the *b. pestis* in the blood does not always indicate a fatal prognosis. Calvert claims to have seen the plague bacillus in the blood of four persons who recovered. In one of the cases the microbe remained in the blood for forty-eight hours.

At the beginning of a case of plague during which time the bacilli are very rare in the blood, we advise the employment of the procedure so sensible which is to-day utilized in searching for the bacillus of Eberth in the blood of typhoids. One takes 1 c. c. of blood by puncturing a vein by means of a Pravatz syringe and one plants it in 500 c. c. of peptonized bouillon. By employing so great a quantity of blood there are greater chances of discovering the pest bacilli than by employing a single drop of the same fluid. Bouillon should contain flocculi and not be clouded, if the bacilli of plague are discovered in a pure culture in the blood.

Now that we have learned how to obtain a pure culture of the bacillus of Yersin, let us pass in review the various characteristics of this microbe.

Morphology of the Microbe of Plague.

The microbe of plague is a short, squatty bacillus, especially when it is found in the buboes, and a little longer when found in the blood. It stains easily with all the aniline dyes but does not take Gram's stain. The two extremities of the bacilli stain strongly and leave between them a central space which is more clear. It is therefore a spindle shaped microbe. Sometimes the bacilli seem to be surrounded by a capsule.

The microbes growing on a culture of gelatin have the aspect of short little sticks, especially when grown from the buboes, but in the middle of these short rods, one sees the round forms like cocci and the elongated forms which have sometimes given the name coco-bacillus to the microbe of plague.

When grown on liquid media, the microbe forms itself in little chains like a strepto-bacillus.

The bacillus of plague is stained with all of the aniline colors but it does not take Gram's. This characteristic is important to remember, since by this alone it is possible to differentiate this organism from the ordinary microbes of suppuration, staphylococci, streptococci, and pneumococci, all of which take Gram's. Also we advise the treating of all smears (pus, sputum, etc) with a double staining, Gram's eosin or dilute fuchsin.

For smears from the organs one should employ counter staining but in the inverse order, that is to say, staining first the field with eosin, and afterward, the microbes with methylin blue or violet.

A particular characteristic of the pest bacilli is their cultivation at laboratory temperature, that is to say, at 18° or 20°, rather than the temperature of the incubator.

The organism of plague may be grown upon all the media. Upon gelatin, the colonies are at first white and transparent, afterward their center becomes opaque and yellowish, and when one examines them, appear slightly swollen. The diameter of the colony always remains very small.

The organism of pest grows in bouillon or on water of peptone, 2 to 100. The growth upon these two media is similar to that of the streptococcus, i. e., floculi are formed upon the sides of the tube and does not cloud the bouillon.

The bacillus of plague grows in a characteristic fashion when cultivated after the method of Haffkine. This method consists in placing upon the surface of the bouillon after it has been sterilized, a little coconut oil or butter. After the culture has developed, one sees upon the inferior surface of the fatty droplets, flakes and stalactites. Care must be taken not to shake the tube lest one precipitate the flakes held in suspension.

The pest bacillus grows very slightly or not at all upon potatoes at the temperature of the incubator but at the temperature of the laboratory, 15° or 20°, it forms after four or five days a slight coating in the track of the culture. A second passage gives a pearly culture. (Lignieres.)

The bacillus of plague is a very fragile microbe. An exposition of a few moments to 58° is sufficient to destroy it. Sunlight acts in the same manner, but it requires an exposition of four hours to light irradiations to kill a culture. When the microbe is in an albuminous media (sputum, pus, etc.) it is thus protected and its resistance is much greater. Dessication kills it quickly if it is not in a protective albuminous media. All of the antiseptics employed in disinfection kill the pest bacilli in a few moments (corrosive sublimate, carbolic acid, permanganate of potash, chlorinated lime, etc.)

Vitality in Water.

Inghilleri has studied carefully the duration of survival of pest bacilli in distilled water and potable media to determine their adaptability to aquatic media.

(A) Survival in distilled sterilized water. At room temperature plague bacilli live from thirty to sixty days in sterilized water. If one places the flask containing the pest bacilli in the incubator at 35°, the survival is still longer,—60 to 75 days.

(B) Survival in potable water. The survival of pest bacilli is much less in ordinary drinking water than in sterilized distilled water. This is easily explained by the vital competition of the microbic flora of water which rapidly reaches suffocation and causes the pest bacilli to disappear. The latter does not disappear completely for about a month in this environment.

The best method consists of adding to the original culture the proportions growing in water. The bacilli lose their virulence, but when recovered, will revive at the end of five days. (Burnet.) In fact all the researches indicate that pest bacilli are not suited for life in water and resist during a short time but do not multiply.

Vitality in Grains and Rags.

This question is important to solve because grains and rags have been accused of transporting the contagion for great distances. The investigations should be made by spreading pure cultures upon various samples previously sterilized. Corn, peanuts, linseed, farina, rags of wool, cotton and linc which have been soiled with the saliva of virulent plague cases.

According to Hankin, the bacilli do not remain virulent on these substances for more than six days. It is necessary therefore to search for other things to explain the undeniable role played by grains and rags in the transmission of plague.

Vitality in Cadavers and Excrement of Rats.

Maassen, instead of using the method of cultures for revealing the presence of plague microbes in the viscera of rats dead from plague, has adopted the more reasonable method of animal inoculation. To this end he introduced beneath the skin of rats or guinea pigs fragments of the spleen, liver, and buboes which he wished to analyze. Plague was often found in the body of the inoculated animal when the culture of the suspected viscera did not furnish a single colony.

The fragments of pest tissue are then absolutely comparable to fragments of tuberculosis tissue. The growth and stain which is not found sometimes in Koch's bacillus in tuberculous products (white swelling, lupus, etc.) is found upon inoculation of a fragment beneath the skin of a guinea pig, thus demonstrating truly the tuberculous nature of these products.

It has been found that at a temperature of 20° the cadavers of plague rats are very virulent thirty days after death and that at a temperature of 8° the cadavers of plague rats preserve their virulence for at least fifty-three days.

In the excrement of rats fed upon the cadavers of pest rats the bacillus of Yersin preserves its virulence for a short time only; one day upon dried feces, four days when these materials have been preserved from desiccation. To study the vitality of the bacilli in these excrements, Maassen placed the suspected material upon the skin of a freshly shaved animal (Marie).

To sum up, all these experiments demonstrate that merchandise thought to be apt to propagate plague, such as rags and grains, are dangerous not because of their being soiled with the excreta of human plague, but because they serve as a refuge for rats suffering from pest and that upon the death of one, virulent plague bacilli are preserved in the viscera for a considerable time. The bacteriological conclusion is then, that we should make a relentless war upon the rat which is the specific vehicle of the disease.

Animal Inoculations.

Nearly all animals are more or less susceptible to plague, for it has been found that they may take the infection through cutaneous, respiratory and digestive channels.

(A) Cutaneous Route. All laboratory animals (squirrels, rats, guinea pigs and rabbits) are so susceptible to the pest virus that it is sufficient to prick them with a needle charged with the virus to cause in them a fatal case of plague. Here is the method of operation: to inoculate a squirrel or a rat one charges the point of a lancet with a fragment of a culture of pest bacilli or agar, and then pricks the animal in one of the hind feet, in imitation of the maneuver with which one inserts vaccine in the arm of a man, that is to say, by turning the lancet so as to remove the superficial layers of the skin. After a few hours the animal is dull, it limps,—a buboe appears in the glands on the corresponding side, and finally the bacilli are generalized throughout the entire lymphatic and vascular systems. At autopsy the bacilli may be recovered from all the viscera.

To cause plague in the guinea pig, it is sufficient to pluck out a few hairs and to smear the denuded surface with a culture. The animal then presents a local eschar (plague carbuncle) and very quickly succumbs. At autopsy one finds the spleen crowded with little yellowish bacillary foci recalling slightly the appearance of tubercles.

The rabbit should be inoculated by a subcutaneous injection or by spreading the pest virus upon the cutaneous surface denuded and irritated by a razor. In the latter case a sphacelus occurs at the point of inoculation. When one is dealing with a microbe of low virulence it is better to inject beneath the skin. Finally when one is searching for the organism from a fragment of the viscera of the cadavers of plague rats, it is better to introduce all the suspected fragment beneath the skin of a guinea pig or a rat, according to the method of Maassen.

Apes react very quickly to a subcutaneous inoculation as was demonstrated by the Russian Commission at Bombay. It is sufficient to inject beneath the skin of the arm a small quantity of the pest virus to see develop one or two days later edema at the point of inoculation, an axillary buboe, and a fever from 38° to 42° C. Death follows in three to five days. Apes succumb in the same way to an inoculation of minute doses of the virus, as for example, when one simply pricks them with a needle soiled with a pest culture. But then one does not find much localized edema at the point of inoculation, neither are there produced so large glandular tumefactions or buboes. These experiments explain human cases in which one frequently cannot discover any cutaneous lesion in the region tributary to the affected gland.

Passage from animal to animal raises the virulence of the microbe when passed through the same species but not when introduced into other animals. Thus a bacillus of exalted virulence for squirrels affects rabbits but slightly.

(B) Respiratory route. To cause a plague pneumonia it is sufficient to inject a few drops of a virulent culture into the trachea of a receptive animal. The Russian physicians in Bombay have thus produced fatal cases of plague in apes. The pneumonic form of human plague would thus seem to be due to the penetration of the virus into the lungs in the form of atmospheric dust.

Roux and Batzaroff have demonstrated that it is easy to give fatal plague to rats, guinea pigs and rabbits by placing upon their nasal mucous membrane a small number of plague bacilli grown upon a gelatine culture. One is thus better able to transmit plague from animal to animal than by subcutaneous inoculation. Thus intra-nasal inoculation with at-

tenuated virus gives positive results when subcutaneous inoculation with the same virus is not sufficient to produce the death of the animal. At autopsy one finds a lobular or pseudo-lobular broncho-pneumonia with hemorrhagic spots upon the pericardium, peritoneum, stomach and kidneys. The spleen is covered with shining white granulations which are little masses of bacilli. As we shall see later the lesions are exactly the same as those of human plague pneumonia.

(C) Digestive route. It is possible to communicate the disease by the digestive tract by the ingestion of pure cultures of pest bacilli or fragments of the spleen or liver of an animal dead of plague.

According to Simpson, who investigated the matter at Hong Kong in 1901, most domestic animals will contract plague if they are fed upon infected material. The following may be infected by the digestive tract: apes, pigs, calves, buffaloes, sheep, chickens, ducks, geese, turkeys, pigeons and rats. In pigs the incubation is somewhat longer and may exceed one month.

It is very probable that the infection of animals by the digestive tract is not as it appears and that the penetration of the virus is made in reality through the nasal mucous membrane as was proven by the experiments of Simond and Batzaroff. (See later "Propagation of Plague From Rat to Rat.")

Certain birds, for example, vultures, seem to possess a complete immunity against plague. We know that in India the cadavers of the Parsees are exposed in what are called the "Towers of Silence," where the vultures go to devour them. During the plague epidemics which raged in Bombay none of the vultures of the "Towers of Silence" on Malabar Hill were affected by the epidemic.

Bacteriological diagnosis of plague. Thus we find in the presence of a case of suspected human plague that it is of the greatest importance to arrive at the exact diagnosis of the disease with the greatest possible rapidity in order to take measures for immediate preservation. The most common forms of the disease in man are the bubonic, pneumonic and septicemic. It follows that in the presence of one of these clinical forms one works with different fluids; lymph or pus from the buboe, sputum or blood. Each of these pathological products is submitted to the three following tests:

1. Smear, simple stain, Gram.
2. Culture, agar at low temperature.
3. Inoculation in the hind foot (rat or guinea pig.)

The microscopic examination of smears gives at once a good clue which the culture and inoculation transforms into a fact the next day or the day thereafter.

Serum diagnosis. The German Medical Commission sent to Bombay has demonstrated that the serum from the blood of plague patients exercises upon an emulsion of a pure culture of the plague bacillus the same agglutinating action that the serum of typhoid and cholera patients has toward the bacillus of Eberth and the comma bacillus.

Pseudo plague bacilli. We must be on guard against a possible error in the bacteriological diagnosis of rat plague. When an epidemic exists among the rats we should not conclude that it is inevitably plague. In fact there exists sometimes a special microbe which resembles morphologically the bacillus of Yersin and occasionally produces death in the rat. Neuman has called attention to the existence of this species. There arrived at Hamburg a ship on board of which was found a dead rat. The autopsy of the animal revealed the anatomical lesions which would make one think of plague—enlarged spleen, hypertrophied glands and foci of pneumonia

in the lungs. The bacteriological analysis isolated an organism resembling closely the bacillus of Yersin but the microbe was not pathogenic to the rat on ingestion. All of the other procedure of inoculation, particularly of the subcutaneous injection, which is so sensitive in the case of true plague, were without result. This was further confirmed by the agglutination test, the organism remaining indifferent on contact with pest serum.

According to Ganthier and Rayband, it is better for the serum identification to use an anti-pest serum which has not been heated. The ordinary therapeutic serum of the Pasteur Institute has been submitted to a certain amount of heat which lessens its agglutinating power.

Anti-Pest Substances.

Haffkine's anti-pest lymph. Haffkine's prophylactic is neither a serum nor a vaccine. It is not a serum because it is not made from the blood of any animal. It is not a vaccine because it does not contain the attenuated and living microbe as does the anti-anthrax vaccine and true vaccine, for example. Therefore the name of lymph suits admirably. Here is how Haffkine prepares his prophylactic lymph: a flask of two litres is filled with a certain amount of bouillon, upon the surface of which is floated some butter. The bouillon is sterilized and then planted with a culture of the bacilli.

The bacilli develop upon the under surface of the butter, sending forth numerous vegetations in the form of stalactites toward the bottom. Five or six times in the course of a month one lightly agitates the flask in such a manner as to precipitate to the bottom the major part of the culture. At the end of a month one satisfies himself that the culture has remained pure, then the liquid is drawn off into test tubes, which are sealed and heated for one hour at 70°. The contents of these tubes are used for inoculations. Before making the inoculations the tube is agitated so as to place in suspension the deposit from the fluid.

Haffkine inoculates from 3-3½ cc. in an adult; 2-2½ cc. in a woman; 1 cc. in a child of more than 10 years; 0.1-0.3 cc. in young infants.

Our colleague, Calmette, spoke in the following terms of the method of Haffkine at the Congress of Rotterdam in 1901:

"I have been able to prove from the first," said he, "that the immunity after a single inoculation of 3 cc. of a culture in bouillon one month old and heated for one hour at 70°, is not established for seven days. It lasts on the average three weeks in the guinea pig and one month in the ape, testing the resistance for these animals with the same dose of the same virus. In the rat the immunity is more durable after a single injection of 2 cc. of a heated culture. In my experiment it has lasted as long as three months. It is therefore possible by Haffkine's method with a single inoculation with cultures killed by sufficient heating, in the great majority of cases to establish in man a sufficient immunity to permit him to pass through an epidemic of plague with immunity.

"Haffkine's vaccination should in consequence render the greatest service in infected countries. because of the ease with which it is rapidly grown and by reason of the fact that great quantities of cultures may be produced almost without expense and because the inoculation of heated cultures, even though accompanied with a little pain in certain cases, is not followed by a prolonged incapacity for work."

(To be Continued.)

PUBLICATIONS

A Practical Treatise on Materia Medica and Therapeutics, with Especial Reference to the Clinical Application of Drugs. By John V. Shoemaker, M. D., LL.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital, etc. Sixth edition. F. A. Davis Company, Publishers.

This work now appearing in its sixth edition is too well known to require any lengthy review to point out its merits. The last revision has necessitated many changes in the text, particularly in the direction of nomenclature and strength of preparations. Other notable changes have also been made. Part I of this edition is entirely new and deals with pharmacology in general; included in this portion is a table giving the changes in the strength of preparations and relative dosage, in the present Pharmacopeia and the one which preceded it. Among the new therapeutic agents discussed may be mentioned the Roentgen ray, Finsen light and vibrotherapy. The articles on serumtherapy, animal extracts and hydrotherapy are all suggestive, while that on electricity in medicine is excellent.

A. J. L.

Atlas and Text Book of Human Anatomy. By Dr. Johannes Sobotta, Professor of Anatomy in the University of Wurzburg. Edited, with additions, by J. Playfair McMurrich, A. M., Ph. D., Professor of Anatomy in the University of Michigan. Volume II. The Viscera, including the Heart. 214 illustrations, mostly in color. W. B. Saunders Company, 1906.

This volume is the immediate continuation of the first, and treats of the viscera. For purposes of convenience in dissecting the heart has been included in this book. Topographic anatomy as such has not been specially considered, but often, especially in the original illustration, the method of presentation is necessarily of a topographic character. So well known is Sobotta's Anatomy, particularly in the original, that it seems unnecessary to the reviewer to point out the excellence of the many illustrations produced by the artist, Mr. Hajek. The same methods of reproduction have been employed in this volume as in the first, namely autotype, multi-colored lithography, and the three-color process. Explanatory figures and diagrams have been reproduced by simple line-etchings.

A. J. L.

Cosmetic Surgery. The Correction of Featural Imperfections. By Charles C. Miller, M. D. Second Edition Enlarged. 134 pages. Published by the Author, 70 State street, Chicago.

This small volume deals with an aspect of surgery somewhat remote from the interest of surgeons, but sooner or later featural surgery is destined to take its place as a recognized specialty. Left largely in the hands of "beauty specialists" and others of that tribe, advances in this field have been limited from want, in part, of adequate stimulus on the part of the medical profession. Fortunately here and there, a few at first looked upon askance have established reputations founded upon honest effort in the uplifting of practice of this kind. Among these may be mentioned the author of this book. "Four or five years ago ethical practitioners laughed or grew hostile when I mentioned my interest in elective surgery of the face for the correction of featural imperfections which were not actual deformities. Two years ago medical publishers refused to consider a manuscript upon the subject."

The modest and suggestive account of the author's experience in the correction of various deformities such as the excessively large ear, outstanding ears, folds, bags, and wrinkles of the skin about the eyes, hump and tip tilted nose, the inverted and overdeveloped lip, the unusually large mouth, etc., indicates at least some of the possibilities in this field of work. While the various operative procedures described may not meet with unanimous approval, yet the author assures us that they have given excellent results in his hands. Other than this general discussion of the book, no further comments seem necessary beyond emphasis of the admonition of the author "that discretion prevail, and that perfect results alone are satisfactory in this branch of surgery, and that no operation be attempted without careful consideration of the case from every point of view so that no untoward or unexpected complications may arise to discredit operator or specialty."

A. J. L.

A Manual of Pathology. By Guthrie McConnell, M. D., Pathologist to the St. Louis Skin and Cancer Hospital and to St. Luke's Hospital; Bacteriologist to the Missouri State Board of Health; formerly Assistant Pathologist to the Philadelphia City Hospital. W. B. Saunders Company.

For one reared in a world where the importance of morphological detail is subordinated to the biological significance of such expressions of altered function, much in this volume will appear commonplace and inconsequential. Careless of critical discrimination and writing from a viewpoint of a decade back, the author does not glance beyond the gross manifestations of disordered function and altered structure to the fundamental qualities of living substance with which science has mostly dealt within the last few years. Of greater and more permanent value to the student than mere morphology is a general conception of pathology in its relationships to the phenomena of normal physiology.

In placing the book before the public the author naturally disclaims an attempt to replace any of the more voluminous works on pathology; he has sought brevity and has tried at the same time not to sacrifice clearness in the exposition of the material. In so far as its brevity is concerned we pronounce the work a success, but as to the clearness our misgivings might be accounted a prejudice. As might be expected the introductory chapters entitled Pathology, Defects of Development, Disorders of Metabolism, Circulatory Disorders, and Retrogressive Processes contain discussions reduced to the proportion of dictionary definitions. The succeeding one on Inflammation is most disappointing; no reference here to the outlooks so happily emphasized in the monographs of Metschnikoff and Adami. What should have been an illuminating and suggestive discussion is but the time worn tale of yesterday. The section devoted to Neoplasms, while necessarily containing short descriptions which might be considered from the examiner's standpoint adequate, is, so far as making the nature of the various tumors clear, utterly useless. The account in the following chapters of Ehrlich's Lateral Side-Chain Theory is futile. Chapters XII on Specific Micro-organisms and XVII on Bacteriological Methods would have better been omitted. On page 267 it is stated that the "milk-spots so commonly observed on the epicardium are the result of constant pressure"; we grant that this view has often been expressed, but our experience does not accord with this belief. In the part devoted to the pathology of the heart, we find no mention of the role played by lesions of Hiss' bundle; nor do we find the description, in another part of the book, of the production of gall-stones complete.

Without entering into a more detailed criticism of this little volume, it seems clear to the reviewer that the point of view is so restricted that it forecloses any significant gleanings of the relationships of pathology to the allied phases of biological science, nor does it suggest pathology as but one aspect of the diverse manifestations of life and energy, rather than as belonging to a special and exclusively human domain.

A. J. L.

A Compend of Surgery for Students and Physicians.

By Orville Horwitz, B. S., M. D. Professor of Genito-Urinary Surgery, Jefferson Medical College, etc. Sixth Edition, P. Blakiston's Son & Co. 1907.

That there should be demand enough for a quiz compend of surgery to cause it to be printed, is a sad commentary on our system of medical education. That there could be any commendable feature of such a book is inconceivable, and it is well known and shamelessly admitted that they serve merely as a help to passing examinations. Probably the facts so crudely stated are for the most part correct; but such a compilation is merely to make easier the useless memory-tests of our school and state examinations. From the standpoint of surgery there can be nothing useful or stimulating or even purposeful in the "quiz compend." The fact that this little book is part of the library of so many of our medical students is a significant reflection on the manner in which surgery is taught in our schools. Is it not time the set lecture courses of surgery were discarded, in favor of something alive, that will keep the student awake? Of what interest can it be to a student to hear a professor of surgery tell for an hour what can be read in the books? He is not blind that his pabulum should be so administered. Let the time be taken in demonstrating cases to illustrate the reading; in teaching the man to examine the patient with his own senses. Our students do not intimately handle enough cases. Reading without the specific illustration is deadly, but becomes a live interest when the man has just seen a case in point. If the time wasted on set lectures were consumed in giving well chosen clinics, in quizzing the students at the bedside, in instructing them while they performed operations on animals, the quiz compend would go out of print.

The man who conducts a course in surgery should consider it a personal indictment of his method, that his students read a compend. What a man has seen and done for himself makes him a valuable member of the profession—not what he has committed to memory—and our examinations should be so framed—if we must have them—that they will set a premium on experience, even, to students, and not on the conning of textbooks.

Whether or not the "quiz compend" that is under consideration is different in any way from others in its class, I do not know. I should as soon think of reading the dictionary as a quiz compend. C. B.

Text Book of Psychiatry: A Psychological Study of Insanity for Practitioners and Students.

By Dr. E. Mendel, ao Professor in the University of Berlin. Authorized translation edited and enlarged by William C. Krauss, M. D., Buffalo, N. Y. President Board of Managers, Buffalo State Hospital for the Insane; Medical Superintendent Providence Retreat for the Insane. Neurologist to Buffalo General, Erie County, German, Emergency Hospitals, etc. Member of the American Neurological Association. Philadelphia, F. A. Davis & Co., Publishers, 1907.

We must congratulate Dr. Krauss for his discernment in giving us an English version of Prof. Men-

del's book. We must commend the publishers for modestly hiding so many excellencies in a volume of convenient size and of three hundred pages.

The author tells us that his object "is to bring cases demonstrated at the clinic, into the general perspective of psychiatry, and to enable the student to fill up the gaps, which the clinic must necessarily omit in the limited time given."

However, it is not to the college student alone that the book is valuable, nor to the general practitioner. The specialist will find it a fruitful source of information. Indeed the last would evidence little interest in his subject were he not curious to know how Mendel divides the Psychoses or how he interprets Dementia Precox or what his opinion is on many a disputed point. There are too few authoritative treatises or text books on insanity to neglect any of them.

No man will agree with all that another says on Psychiatry. The tabulated facts have reached no final arrangement. The interpretation and classification of to-day may be discredited to-morrow. However, until better times come, we must have books which will lead us to a correct diagnosis in the majority of cases and we know of no other book which can more efficiently guide us than the one under review. The amount of material which the volume contains is most extensive—the definitions and descriptions are charmingly concise, yet adequate—the order and proportion admirable. In the Supplement is "a guide for the examination of one mentally diseased, and for the preparation of the clinical history," which is in keeping with the high character of the rest of the book.

We can not speak too well of this "The Text-Book of Psychiatry." We remember Mendel as a kindly man, a keen observer and a great teacher. He came into the world, he did his work well and his work is over.

M. L.

A Study of the Human Blood-vessels in Health and Disease. A Supplement to "The Origin of Disease." By Arthur V. Meigs, M. D., Physician to the Pennsylvania Hospital. J. B. Lippincott Company, 1907.

This is a well printed and attractive book of about one hundred and thirty pages, the most striking feature of which is its collection of excellent pictures. It is not an exhaustive treatise, nor does it make such pretension, but is rather a collection of personal observations, and consequently reflects the author's personality to a much more marked extent than does the usual medical book. In this instance the reader is gainer by such a condition, as the frankly personal opinions have the tone of good sense, independence and scientific spirit, and withal a healthy rebelliousness toward taking things for granted simply because they have been taught generally. On no subject that forms the content of a chapter is the discussion either orderly or complete. The study is interesting and suggestive in every instance rather than conclusive, and while it can not serve as a text book, its frank outlook and creditable freedom from conventional shackles, and most of all its good pictures make it a valuable adjunct (or possibly antidote) to the regular text book. The subject of the blood-vessels is attacked in a narrow manner, the observations being almost solely of a purely histological nature. In doubtful places one misses entirely the evidence that embryology or experiment would bring. In this respect the main weakness of the book is apparent, and on this account it lacks conclusiveness.

The remarks on the capillaries are fresh, suggestive and valuable, but the section on new vessels falls far short on account of the total lack of the

strong light that embryology would throw on the subject; neither has the research been orderly or sufficient. The opinions advanced by the author are based merely on isolated histological pictures that he has stumbled upon and may be right or wrong.

Under the heading "The Blood-vessels in Disease," the opinion is expressed that there is no lesion of the blood-vessels peculiar to each of the processes, inflammation, tuberculosis or syphilis, and little import is attached to the usually recognized pathological entity, syphilitic endarteritis. Under the discussion of arteriosclerosis, it is suggested that apoplexy may often come from the perforation of round ulcers of the vessel wall, analogous to perforations of stomach and intestinal ulcers. This idea is rather striking, when one thinks of the frequency of miliary aneurisms in the vessels of the brain, in cases dying of cerebral apoplexy. In the same chapter, however, the frequency of chalky deposits and stiffening of the arterial walls is admitted. No etiological factor for the vascular ulcers is suggested, but the recent experimental production of gastric ulcers by feeding colon bacilli, suggests to the reviewer the possibility of an infectious origin of such lesions.

In the discussion of vessels of the heart there has been no addition made to our present knowledge. The well-known terminal character of the vessels and the fact that the muscle cells are penetrated by capillaries is reiterated and good illustrations are given. Great stress is laid on the author's observation that the intima of the vessels is often found greatly thickened even in young people.

The section on the lungs is quite barren of new facts and that on the spleen admittedly inconclusive, the bare statement being made that its blood-vessels are prone to endarteritis. In the main the book is valuable chiefly because it is rather suggestive. Its barrenness is due chiefly to its reflecting the barren state of the knowledge we have of the blood-vessels, rather than to any fault of its own.

C. B.

Pulmonary Tuberculosis. By Francis M. Pottenger, A. M. M. D., Monrovia, Cal. Wm. Wood & Co., 1908.

The work of Dr. Pottenger, which recently appeared from the press of Wm. Wood & Co., is, of the large number of books which have of late appeared on this subject, probably the most important one which has been written in the English language. From the wealth of clinical material over which he has command, he has culled a store-house of valuable information, which has been carefully compiled and arranged into a most practicable text-book. A description of the various chapters, many of which contain much original material, would be impossible within the brief limits of a review. Those on diagnosis and treatment are, however, of such importance as to demand more than passing notice.

The author has endeavored to give a full discussion of early and late diagnosis, and very thoroughly goes into an explanation of the cause of symptoms and the rationale of the physical signs. Methods of examination for the recognition of early signs are given the importance they deserve, which feature alone makes the work one of peculiar value, coming at a time when the necessity of earlier recognition of tuberculosis is so generally admitted.

In the discussion on the bacillus he describes the "splitter" or spore form, to which attention has been called by Spengler, and explains its staining characteristics. Methods of staining in order to differentiate between the human and bovine bacillus are also described, which is of the utmost importance, if recent observations in tuberculosis therapy shall have acceptance.

In the chapters on treatment, the importance of diet, rest and exercise, hygiene, fresh air, hydro-

therapy, etc., are thoroughly discussed; the advantages of sanatorium treatment are reviewed dispassionately and clearly; and these are all given their true value, as means by which the natural immunizing processes of the body are brought into activity.

The chapter on Specific Treatment has been written in the light of modern studies on immunity, and in it the author clearly demonstrates that cure in tuberculosis must be wrought by measures which are directed against the cause of the disease—the micro-organism; that it is accomplished through the establishment of immunity on the part of the patient to the tubercle bacillus and its toxins. The action of tuberculin as a means of artificially stimulating the machinery of immunization is exhaustively discussed, and the theories on which have been built our present day conception of tuberculin therapy are explained. The author is exceptionally qualified to discuss this subject by reason of his great experience with these remedies and his unusual opportunities for careful clinical investigation.

The chapter on Displacement of the Thoracic Viscera in Advanced Pulmonary Tuberculosis is most instructive; and his observations on the effect of advanced tuberculosis on the heart, much more complete than those found in the usual text-book. It is to be regretted that the author did not write a chapter on pathology.

His description of the preparation of some of the forms of tuberculin is open to criticism, particularly T. R., for its preparation is much more complicated than his description would suggest. The reviewer would also submit that its administration can not be carried out by such a regularly interspersed plan of dosage as is described. The intelligent and successful use of tuberculin is only accomplished as the result of careful observation and clinical experience, and while the administration of five milligrams of T. R., or more as the author recommends, might be a perfectly safe procedure in his hands, it might be fraught with grave and fatal danger in the hands of one not accustomed to its use. The rapidity with which tuberculin is springing into favor in all quarters is, the reviewer fears, going to react to its discredit, because of the abuses to which it must inevitably be put by those untrained in its use, and not conversant with the later theories of immunity.

The work throughout is annotated with marginal notes, which to many will be a convenience. Dr. Pottenger's book should find a place in the library of every progressive physician.

G. H. E.

ARMY MEDICAL EXAMINATIONS, 1908.

The Act of April 23, 1908, reorganizing the Medical Corps of the Army, gives an increase in that Corps of six colonels, twelve lieutenant-colonels, forty-five majors, and sixty captains or first lieutenants, and establishes a Medical Reserve Corps as an adjunct to the Medical Corps. Under this recent act, the lieutenants of the Medical Corps are promoted to captain after three years' service, instead of five, and the increase in the higher grades insures promotion at a reasonable rate all through an officer's military career. Furthermore, applicants who are found qualified in the preliminary examination are appointed first lieutenants of the Medical Reserve Corps and ordered to the Army Medical School in Washington, D. C., for eight months' instruction.

Preliminary examination for appointment in the Medical Corps will be held on August 3, 1908, and formal applications should be in possession of the War Department prior to July 1st. The applicant must be a citizen of the United States, between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, of good moral character

and habits, and must have had at least one year's hospital training or its equivalent in practice. The examination will be held concurrently throughout the country at points where boards can conveniently be assembled, and due consideration will be given to the localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general preliminary education may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

The large number of vacancies created in the Medical Corps by recent legislation makes it certain that all successful candidates will be recommended for a commission for several years to come.

It is desired to obtain and maintain a list of qualified medical men all over the country who are willing to serve as medical officers in time of emergency, and to such men the President is authorized to issue commissions as First Lieutenants, Medical Reserve Corps. It is recognized that it will be necessary to place only a limited number of these officers on the active list in time of peace, and it is hoped that young medical men throughout the country and medical officers of the militia of the various States may be sufficiently interested to secure positions on the Medical Reserve Corps list.

An applicant must be between twenty-two and forty-five years of age, a citizen of the United States, a graduate of a reputable medical school legally authorized to confer the degree of doctor of medicine, and must have qualified to practice medicine in the State in which he resides. Examinations will be held in the near future and will embrace the practical medical subjects.

Full information concerning the Medical Corps and the Medical Reserve Corps may be procured upon application to the Surgeon-General, U. S. Army, Washington, D. C.

NEW AND NON-OFFICIAL REMEDIES.

The following articles have been added to the list of New and Non-Official Remedies approved by the Council on Pharmacy and Chemistry:

Lecithin Solution (Fairchild Bros. & Foster).

Lecibrin (Fairchild Bros. & Foster).

Glycerole Lecithin (Fairchild Bros. & Foster).

Casca-Laxative (H. K. Mulford Co.)

Bismuth Hydrate Comp. (H. K. Wampole & Co.)

Liquor Sedans (Parke, Davis & Co.)

Liquor Sedans Rx2 without Sugar (Parke, Davis & Co.)

Liquor Sedans with Cascara (Parke, Davis & Co.)

CHICAGO MEETING OF THE A. M. A.

The fifty-ninth annual session of the American Medical Association was held in Chicago, June 2 to 5. For the first time since the St. Paul meeting in 1901 the association met in the center of the country. To this fact, as well as to the greatly increased membership in the last few years is due the large attendance. The registration office opened at 8:30 on Monday morning, and it was apparent almost from the start that all previous records of attendance would be broken. In the four days of the session 6447 members were registered. Including those Chicago members who did not register, there were at least 500 in attendance whose names do not appear on the registration list. The actual attendance would not fall far short of 7000. Adding at least 10,000 guests, exhibitors, etc., makes the actual number of persons in attendance about 17,000. The general headquarters

and registration offices were located in the First Regiment Armory at Sixteenth and Michigan avenue, where were also found the sections on stomatology and pathology and physiology as well as the house of delegates, commercial exhibit, scientific exhibit, etc. The meeting places for the other ten sections were the First and Second Presbyterian churches, Sinai Temple, the Calumet Club and Grace Church Parish House, all within a few blocks of the general headquarters and the Orchestra Hall in the downtown district, in which the section on surgery and anatomy met. This hall seats 2500 and was supposed to be ample for the meetings of this section, yet it was on several occasions inadequate, being crowded to the doors.

The house of delegates was called to order on Monday morning at 10 by the president, Dr. Joseph D. Bryant of New York, who, in his presidential address, commended the work of the council on pharmacy and chemistry as well as that done by Dr. McCormack in educating the public. He also recommended that a standing committee be established to elaborate the ethical principles underlying the practice of medicine and that general instruction in ethical medicine be made a part of the undergraduate course. He dwelt particularly on the efforts now being made to restrict animal experimentation and recommended action by the house of delegates on this subject. Dr. Bryant also called attention to the invitation extended by President Roosevelt to him as president of the American Medical Association to take part in the conference recently held at Washington on the "Conservation of Natural Resources."

The report of the general secretary showed that the membership of the association on May 1, 1908, was 31,343, a net gain for the past year of 3828. The reports received from state associations regarding the organization of branch associations showed that two states had voted in favor of their establishment, seven had voted against and the remainder had at the time of the publication of the report taken no action. The appointment of a committee to consider uniform provisions for the regulation of county, state and American Medical Association membership was recommended. A communication was presented from the secretary of the American Association for the Advancement of Science, asking that the American Medical Association appoint representatives to the council of that body.

The report of the Board of Trustees included the customary report from the auditing company, showing that the entire business for the fiscal year of 1907 was \$385,030.89; that the total expenditures of the year had amounted to \$356,222.21, leaving a net revenue for the year of \$28,808.68. Detailed statements of all the various accounts of the association's business were given showing the items in each case. The report showed that during 1907, 2,715,293 copies of The Journal had been issued, forming a weekly average of 52,217, an increase of 12½% over 1906.

The committee on medical legislation reported that the army medical reorganization bill and the Carroll-Lazear pension bills had become laws during the last session of Congress. The importance of uniform and adequate state legislation on the practice of medicine and the preservation of public health was emphasized as well as the necessity of careful study of the problems involved. The committee recommended that pending the completion of the work now being done only those changes in existing laws which are imperatively needed should be attempted by state associations. The formulation of the vital statistics bill, endorsed by the United States Census Department, the American Public Health Association, the conference on uniform state laws of the American Bar Association and the American Statistical Association, was

reported and the endorsement of the house of delegates was asked for this measure. The report of the Chicago conference on medical legislation was also given.

The council on medical education reported that the work of the council during the past year had been along the following lines:

1. The inspection and classification of medical colleges as (a), acceptable; (b), doubtful, and (c), unsatisfactory.

2. The conducting of an annual conference with representatives of state examining boards and leading educators for the discussion of the important problems of medical education and medical licensure.

3. The collection and compilation of data regarding (a) medical college students and graduates, and (b) regarding results of state license examinations.

4. A thorough investigation of preliminary and medical education in Europe.

5. Working for the advancement of the requirement of preliminary education in the United States to include a year's work in physics, chemistry, biology and modern languages.

6. Obtaining accurate information regarding high schools and universities in their relation to medical education.

The board of public instruction reported that it had secured a secretary, Dr. R. Max Goepf of Philadelphia, and that it was considering the establishment of lecture systems and of state boards of public instruction, and intended to publish articles in the magazines and public press for the enlightenment of the public on disease.

The committee on ophthalmia neonatorum advised the enactment of laws in each state regarding the registration of births and placing the control of midwives in the hands of the boards of health; that health boards distribute circulars to midwives and mothers on the dangers and prophylaxis of this disease; that state and local boards of health prepare and distribute proper prophylactic solutions with specific directions for their use; that proper records be maintained in all hospitals in which children are born; that periodic reports be made by all physicians to boards of health; that concerted effort be made along the lines of public education throughout the country. This report was approved by the chairmen of the sections on ophthalmology, obstetrics and diseases of women and hygiene and sanitary science.

The committee on scientific research recommended the appropriation of \$200 for the assistance of each of the following:

Drs. D. J. McCarthy and M. K. Myers, Philadelphia, "An Experimental Study of Cerebral Thrombosis."

Dr. Karl Voegtlin, Baltimore, "Chemistry of the Parathyroid Glands."

Dr. Isabel Herb, Chicago, "A Study of the Etiology of Mumps."

Drs. R. M. Pearce, Albany, N. Y.; H. C. Jackson and A. W. Elting, "A Study of the Elimination of Inorganic Salts in a Case of Chronic Universal Edema of Unknown Etiology with Apparent Recovery."

Dr. H. T. Ricketts, Chicago, "An Investigation of the Identity of the Rocky Mountain Fever of Idaho with That Found in Western Montana."

On Tuesday afternoon at the third meeting of the house, the reports of the reference committee were taken up, the reference committee on medical education approving the work of the council on medical education and recommending that it be continued. The reference committee on reports of officers recommended the appointment of a committee of five to consider the elaboration of the principles of ethics. Resolutions condemning the legislative efforts to restrict animal experimenta-

tion were presented. The action of the board of trustees in preparing the second edition of the directory was approved. The reference committee on legislation and political action recommended the approval of the model law for vital statistics, which recommendation was adopted. The resolution presented by Dr. A. T. McCormack of Kentucky, requesting all state associations publishing or controlling medical journals to restrict advertisements to such preparations as were approved by the council on pharmacy and chemistry was adopted. A committee of three to confer with a like committee from the American Pharmaceutical Association in regard to drug reforms was authorized. The candidacy of Dr. C. A. L. Reed of Cincinnati for the United States Senate was endorsed.

On Thursday afternoon the annual election took place with the following results:

President—Dr. William C. Gorgas, Ancon, Panama.

First Vice-President—Dr. Thomas Jefferson Murray, Butte, Mont.

Second Vice-President—Dr. John A. Hatchett, El Reno, Okla.

Third Vice-President—Dr. Thomas A. Woodruff, Chicago, Ill.

Fourth Vice-President—Dr. E. N. Hall, Woodburn, Ky.

General Secretary—Dr. George H. Simmons, Chicago, Ill., re-elected.

Treasurer—Dr. Frank Billings, Chicago, Ill., re-elected.

Trustees (to serve until 1911)—Dr. Wisner R. Townsend, New York; Dr. Philip Mills Jones, San Francisco; Dr. William T. Sarles, Sparta, Wis.

The following nominations were made by the president and confirmed by the house of delegates:

Committee on medical legislation—Dr. Charles Harrington, Boston, Mass., to serve until 1911.

Council on medical education—Dr. Victor C. Vaughan, Ann Arbor, Mich., to serve until 1913.

Committee on transportation and place of session—Dr. M. L. Harris, Chicago, chairman, for three years.

The following were elected honorary members:

Dr. Edward F. Schaefer, Edinburgh, Scotland.

Dr. August Martin, Griefswald, Germany.

Dr. E. Treacher Collins, London, England.

The committee on awards reported the following awards in accordance with the report of the committee on scientific exhibit:

Dr. H. T. Ricketts, gold medal for research exhibit on tick fever.

Dr. Fenton B. Turck, diploma for exhibit illustrating pathology of peptic ulcer.

Northwestern University Medical Department, diploma for teaching exhibit, illustrating morbid anatomy.

Rush Medical College, diploma for teaching exhibit, illustrating morbid anatomy.

Dr. Charles H. Beard, diploma for exhibit of drawings of the human eyeground.

Dr. Maximilian Herzog, diploma for exhibit, illustrating early human embryology.

St. Mary's Hospital, Rochester, Minn., diploma for clinical and pathologic exhibit of stereoscopic photographs.

Dr. Edmond Souchon, diploma for improved method for the preservation and exhibition of anatomic specimens.

Dr. A. M. Stober, Cook County Hospital, diploma for exhibit, illustrating blastomycosis.

Dr. Mallory and Dr. Wolbach (Harvard), diploma for exhibit of drawings and photomicrographs, illustrating the classification of tumors.

United States Public Health and Marine Hospital Service, honorable mention for exhibit, illus-

trating the investigations of Dr. C. W. Stiles on bookworm.

Iowa State University, honorable mention for instructive tuberculosis exhibit.

Cincinnati Hospital, honorable mention for creditable group of specimens.

Philadelphia Polyclinic, honorable mention for creditable exhibit of group of teaching specimens.

Lying-in Hospital of New York, honorable mention for creditable exhibit.

The committee on transportation and place of session recommended Atlantic City as the next meeting place, which choice was agreed to by the house of delegates. The reference committee on legislation and political action reported, requesting the committee on medical legislation to arrange for a conference with the committee of one hundred, the surgeons-general of the army, navy and public health and marine hospital service with a view to securing co-operation on the establishment of a National Department of Health. After the transaction of some routine business the house adjourned.

One hundred and thirty-four members of the house were present out of a total membership of one hundred and forty-two. The meetings of the house were better attended than at any time since its organization. The business was dispatched with accuracy and rapidity, the most notable tendency being the reference of resolutions, communications, etc., to the appropriate reference committees without discussion, reserving the consideration of the questions involved until the reference committee had considered the matter and submitted a report.

The social events of the week were particularly attractive. On Monday night the secretaries of the state associations and the editors of the state journals met at dinner and completed the organization of a state secretaries and editors' association. A dinner to foreign guests as well as a number of other social events also occurred on Monday evening. On Tuesday evening twenty-seven alumni dinners were held in the various hotels and restaurants throughout the city, the largest being that of Northwestern University Medical School, held at the Illinois Athletic Club, at which over 800 alumni were present. On Wednesday evening the president's reception and ball was held at the Coliseum, thousands of members and guests being present. On Thursday evening the local profession tendered the members of the association a smoker at the Coliseum, at which the attendance amounted to about 8000. Numerous social attractions were provided during the day for the ladies and guests, including receptions at the South Shore Country Club, Chicago Women's Club, etc. The sections were all largely attended and the programs were of a high order. The session was in every way the most noteworthy of any which has yet been held, and it is anticipated that some years will elapse before the record established will be surpassed.

CALIFORNIANS REGISTERED AT THE A. M. A. MEETING.

The following physicians from California were registered as in attendance at the recent meeting of the A. M. A., Chicago, June 2d, to 5th:

W. W. Beckett, Mariana Bertola, Stanley P. Black, Adelaide Brown, C. C. Browning, William Fitch Cheney, C. C. Cottle, H. Bert Ellis, J. T. Fisher, N. K. Foster, Mary E. Hagadorn, George A. Hare, Jessie D. Hare, A. W. Hewlett, William E. Hibbard, Vard Hulen, H. A. Johnston, J. W. Jones, Philip M. Jones, C. D. Lockwood, I. A. McCarty, J. L. McLaren, H. G. McNeil, Caroline McQuiston, F. C. E. Mattison, Austin Miller, F. W. Miller, R. W. Miller, C. A. Morris, A. W. Morton, P. T. Phillips, T. C. Pounds, G. F. Reinhart, W. H.

Roberts, Wallace I. Terry, W. C. Tuckerman, H. H. Sherck.

F. K. Ainsworth, J. L. Arbogast, J. L. Benepe, C. A. Briggs, Solon Briggs, Gustav Dresel, T. C. Edwards, Martin Fischer, C. F. Griffin, W. S. Johnson, J. H. McBride, Kaspar Pischel, H. M. Robertson, A. F. Rooney, H. L. Wagner, C. F. Welty, R. L. Wilbur, Norman Bridge, H. D. Crabtree, Martin Krotoszyner and Harry M. Sherman.

COUNTY SOCIETIES

RIVERSIDE COUNTY.

The Riverside County Medical Society held its concluding meeting of the year June 7th, at the Victoria Club, with the wives of the doctors as guests. One of the honored guests was Dr. George Martin of Los Angeles, who has recently returned from England, where he has been associated with Dr. Wright of opsonic fame.

Dinner was served at 7 o'clock in the faultless style of the Victoria Club. The tables were prettily decorated with sweet peas and ferns. Dr. Martin read a very interesting and advanced paper along the lines of vaccine therapy, his subject being "The Role of the Immunizer in Modern Medicine." This was followed by discussion. During the entering of the paper and the discussion, the ladies entertained themselves with bowling and billiards.

A pleasant incident of the meeting was the presentation of a gold-headed cane to Dr. J. B. Baird, who has passed his sixtieth milestone. The presentation remarks were happily made by Dr. W. B. Sawyer, in behalf of the society, and were responded to in a felicitous manner.

Included in the company were Dr. George Martin of Los Angeles, Dr. and Mrs. C. Van Zwahlenburg, Dr. and Mrs. Thomas R. Griffith, Dr. and Mrs. G. E. Tucker, Dr. and Mrs. H. A. Atwood, Dr. and Mrs. W. B. Sawyer, Dr. and Mrs. H. R. Martin, Dr. and Mrs. C. S. Dickson, Dr. and Mrs. W. B. Payton, Dr. and Mrs. J. M. Colburn, Dr. Louise Harvey Clarke, Mrs. A. S. Parker, Miss Agnes Baird, Dr. J. G. Baird, Dr. A. W. Walker, Dr. C. Girdlestone, Dr. Karl Sleeper and Dr. W. W. Roblee.

SAN FRANCISCO COUNTY.

Meeting of May 12th, 1908.

Report of cases, Dr. Krotoszyner;

Three cases of bilateral cystic kidney. Up to 1901, when Jas. Israel's treatise upon the surgical diseases of kidney appeared, only four cases of bilateral polycystic degeneration had been recorded. To this number Israel added four of his own cases. The main reason for the failure of establishing a correct diagnosis is the absence of characteristic symptoms, until suddenly severe uremic symptoms set in, quickly followed by the patient's death. The first case is of this type. It concerns an elderly lady of 60 who was treated at the German Hospital for vague gastric disturbances. Suddenly uremic symptoms set in under which the patient died. The autopsy showed in both kidneys the typical picture of polycystic degeneration with hardly any secretive kidney tissue left. The lesson learned from the first case aided in the diagnosis of the second. A teamster of 41 complained of pain in both kidney regions which had bothered him off and on for several years. When coming under observation large tumors could be felt in both kidney regions. Urine examinations showed the same findings as present in chronic interstitial nephritis. Patient was observed at German Hospital for a number of weeks until his death. Two cystoscopic examinations were made showing low functional capacity of the kidneys. Amount of urea in the daily quantity of urine determined dur-

ing fifteen days varied between 7 and 12 grammes. Blood cryoscopy gave 0.6. Phloridzin test never revealed the presence of sugar. Blood examination gave the low hemoglobin point of 55%; a decrease of red cells to 1,900,000; and a slight leukocytosis (up to 17,000). Tumors on both sides of abdomen which apparently represented the enormously large kidneys were palpable. They grew rapidly in size. Surface of both tumors is regular. Tumor on right side somewhat smaller than that on left side. Patient died under symptoms of deep uremic coma. Autopsy by Dr. Ophuls presented two very large polycystic kidneys. Liver of normal size showed quite a number of small cysts filled with clear liquid. Left kidney weighed 2 lbs. 2 oz. and measured 23x30 cm. Right kidney weighed 2 lbs. and measured 20x10 cm.

Third case concerned a woman of 28. Had suffered ten years ago from hematuria, which lasted three days. After curettement she was seized with severe pain in left loin followed by high fever. At the hospital septic temperatures and cloudy urine were observed. On left side of abdomen, mass was palpable which seemed to belong to the left kidney. Cystoscopy showed many ulcerations on bladder wall. Urine from left ureter cloudy and contained much pus; urine from right side normal. On account of relatively good functional values found in the urine of the left side a nephrectomy was advised which was performed two years ago; a great cyst filled with pus was evacuated. A few months later patient underwent a laparotomy for ventrofixation. About a year later patient suffered again from general malaise and frequent urinations, pressure in abdomen and severe headache. On palpation the right kidney appeared enlarged with irregular surface, its lower pole palpable at navel line. Left kidney not enlarged upon palpation. Cystoscopy reveals a normal bladder. Clear urine collected from both ureter catheters. Functional tests on both sides below par. Microscopically nothing of note. Exposure of right kidney presents picture of a typical polycystic kidney. All cysts are evacuated and nephrofixation is performed. This case presents the rare case of a bilateral kidney in which the involvement of one organ is followed after a long time by involvement of its sister organ. This case further proves the value of functional tests as otherwise the left kidney might have been removed. Patient is gradually improving and at present is in a comparatively good condition.

Dr. Barbat, discussing paper read by Dr. Krotoszyner:—With regard to the operation for cystic kidneys, we find in the vast majority of cases that the congenital cystic kidneys are bilateral and it is very wise if an operation is attempted and the kidney found to be cystic, to defer the nephrectomy until the other side is investigated. My preference is to do an interior operation. Then the second kidney can be explored very easily. It is very wise to explore the second kidney before attempting to operate upon the first, particularly in a case of a congenital cystic kidney.

Dr. Silverberg, discussing paper read by Dr. Krotoszyner:—The remarkable thing about these patients is that they live to this age before the symptoms manifest themselves.

Dr. Krotoszyner, closing discussion:—I think that at present palpation of the kidney is more or less abandoned. I think that ureteral catheterization has made this thing more or less unnecessary. I admit in some instances where it is impossible to make a cystoscopic examination or get evidence before the operation of the condition that the palpation is indicated. As regards the age of these patients having polycystic kidneys, I think that if Dr. Silverberg will look over the literature he will find that almost all ages have these cystic kidneys. It is characteristic that they often go unrecognized

for years. One author quoted cases operated on 10 or 15 years after the polycystic condition was recognized by the clinician. I do not think that the age is anything which should be necessarily wondered at.

SANTA CLARA COUNTY.

The regular society meeting was held May 20th at the St. James Hotel with the following present: Drs. Jordan, Ulrich, Fraser, Tourtellott, Blair, Hopkins, Newell, Cooper, Goodridge, Wagner, Kapp, Simpson, Cothran, Hogg, Miner, Paterson, Kocker, Van Dalsem, Snow, McGinty, Burns, Whiffen, Harris and Park. Dr. Whitney and Dr. H. C. Moffitt were the guests of the Society.

Dr. Cothran presented a most interesting case showing extensive destruction of bony and soft tissues from syphilis.

The society accepted the use of a room from the Carnegie Library for the placing therein of the society library.

Dr. Herbert C. Moffitt of San Francisco read a paper entitled "Clinical Features of Influenza since the Pandemic of 1889-1890." A general discussion followed the reading of Dr. Moffitt's paper, as well as the society thanking Dr. Moffitt for his courtesy.

Dr. Wm. Simpson, our delegate to the State meeting, reported his success in securing the State Society meeting for San Jose in 1909, and already the members of this County Society have started in to make their plans for the largest and best State meeting ever held in California. The meeting adjourned at 10:15 p. m.

K. C. PARK, Secretary.

SONOMA COUNTY.

April 9 Dr. A. W. Morton gave us many fine ideas on Bier's treatment of surgical diseases. Dr. A. Schloss of San Francisco was also a visitor at this meeting, held in Dr. J. J. Keating's office, Sebastopol. We had no meeting on May 14, owing to the sickness of Dr. H. C. Moffitt, San Francisco, who intended to talk on "Internal Medicine." On June 11, we met in Dr. J. W. Clark's office, Santa Rosa, those present being: President, J. H. McLeod, W. J. Kerr, G. W. Mallory, R. M. Bonar, C. H. Thompson, F. O. Pryor, Jackson Temple, J. W. Clark, E. M. Yates, P. A. Meneray, W. C. Shipley, J. J. Keating, Edward Gray, E. J. Ruddock and Henry Meyer, San Francisco, and Professor Josiah Keep, Mills College. President McLeod introduced Dr. Henry Meyer with a few well-chosen words, who immediately entered upon the discussion of the subject, "Intro-vesical Operations Without Knife or Anesthetic with Special Reference to the Removal of Benign Tumors." The doctor gave the credit of this subject of surgery to Dr. Nitzer, who died at 47. Dr. Nitzer was the pioneer in intro-vesical surgery, both as to how to diagnose and treat, and also the instruments were devised by him. Dr. Meyer said that only two or three men in this country were in this work. He explained what could be done in removing benign tumors with the snare and then by pressing a button cauterizing the base of tumor. He explained how he opened the ureteral orifice by a pair of scissors, very small, and with the forceps he extracted calculus from urethra. He demonstrated how to take pieces of stone, catheters or any foreign body from bladder. This he did on the phantom bladder.

We spent a most instructive evening, and gave to Dr. Meyer a hearty vote of thanks for his clear, decisive instructions and advice. After a delicate lunch we agreed to meet in Guerneville, July 12, at 11 a. m. There we shall hear a sermon on a proper subject for laymen and physicians.

G. W. MALLORY, Secretary.

DR. CHARLES S. PORTER NOT DEAD.

Dr. Charles S. Porter of Burnett, reported as dead in the July issue, is alive and kicking—very much so. The error occurred inadvertently in the secretary's report.

CHANGES OF ADDRESSES.

Barbat, Wm. F., from 2305 Howard st., to 2267 Howard st., San Francisco.

Waiss, Alex. S., from Grosse Bldg., to Central Bldg., Los Angeles.

Barkan, Adolph, from 1700 California st., to Butler Bldg., San Francisco.

Sewell, Edw. C., from 1700 California st., to Butler Bldg., San Francisco.

Weber, Phil H., from Redding, Cal., to Winthrop, Cal.

Wheeler, Chas. H., from Fall River Mills, Cal., to Oakland.

Jones, H. Isaac, formerly Starr King Bldg., San Francisco, to First National Bank Bldg., Oakland, Cal.

Rooney, Henry T., from Winthrop, Cal., to San Francisco.

Baum, R. W., from 2502 Washington st., to Hastings Bldg., 162 Post st., San Francisco.

Nelson, Lois, from 1201 Devisadero st., San Francisco, to 816 54th st., San Francisco.

Rosencrantz, Nathaniel, from 1323 Devisadero, to 25 Third st., San Francisco.

Eckhardt, A. O., from Gualala, Cal., to Europe.

Lehnhoff, Wyld Fred, from 1163 Van Ness ave., to Guatemala, Mexico.

Berndt, R. M. H., from 1850 Pine st., to 1388 Geary st., San Francisco.

Harris, H., from 2470 Bush st., to 1204 Sutter st., San Francisco.

Edwards, W. R., from 530 5th st., to 101½ So. Broadway, Los Angeles.

Greene, L. L., from 1362 Peralta st., Oakland, to 2937 Cambridge ave., Berkeley.

Ryfkogel, H. A. L., from 1380 Sutter st. to 2209 Sutter st. San Francisco.

Howard Katherine I. from 2526 Ocean Boulevard, to 1542 California st., San Francisco.

Gibbons, Henry, Jr., from 2405 Fillmore st., to Union Square Bldg., 350 Post st., San Francisco.

Gibbons, Morton R., from 2405 Fillmore st., to Union Square Bldg., 350 Post st., San Francisco.

Gibbons, Henry Walter, from 2405 Fillmore st., to Union Square Bldg., San Francisco.

Voorsanger, Wm. C., from 2502 Washington st., to Hastings Bldg, Post st. and Grant ave., San Francisco.

Belknap, Florence A., from Palo Alto, Cal., to 1498 Fulton st., San Francisco.

Smiley, W. C., from Pasadena, to Beaumont, Cal.

Byars, Alfred H., from Fresno Flats, to Madera, Cal.

Boyd, Samuel G., from 1659 Webster st., to Voorhies Bldg., San Francisco.

Thorne, Walter Scott, from 1434 Post st., to Union Square Bldg., San Francisco.

Cole, J. A., from Yuba City, to Park, Cal.

Park, Lottie C., from 426 6th st., Los Angeles, to Broderick, Cal.

Werner, A. F., from 1627 Grove st., to 883 San Pablo ave., Oakland.

Gedge, D. McC., from 925 Golden Gate ave., to 503 Market st., San Francisco, care Metropolitan Life Insurance Company.

Renz, C., from 818 Grove st., to Chronicle Bldg., San Francisco, care Dr. E. L. Brune.

Cloud, M. M., from Auditorium Bldg., to Grant Bldg., Los Angeles.

Bine, Rene, from 2632 Laguna st., to Union Square Bldg., San Francisco.

Alden, Bertram F., Ortman Bldg., San Francisco.
Hours, 2 to 4. Residence, 4200 California st.
Bricca, C. R., from 665 Green st., to Butler Bldg., San Francisco.

Delmont, Francis, from 831 Oak st., to 610 Green st., San Francisco.

Howard, Jos. Louis, from 1059 O'Farrell st., to Butler Bldg., San Francisco.

Sherman, Harry M., from 2210 Jackson st., to Union Square Bldg., San Francisco.

McChesney, Geo. J., from 2210 Jackson st., to Union Square Bldg., San Francisco.

Hopkins, M. F., from 38 N. 2d st., to Ryland Bldg., San Jose.

Conlan, F. J. S., from 1766 O'Farrell st., to Butler Bldg., San Francisco.

Dillon, Jno. Francis, from 829 Fell st., to 1992 15th st., San Francisco.

Smith, Kirby B., from San Leandro, to Melrose, Cal.

Cluness, W. J., Jr., from 2403 Fillmore st., to Union Square Bldg., San Francisco.

Hopkins, Wm. E., from Gough and Turk sts., to Butler Bldg., San Francisco.

Hopkins, Edw. K., from Gough and Turk sts., to Butler Bldg., San Francisco.

Mardis, Benj. A., from 6th ave. and Clement st., to Ortmann Bldg., San Francisco.

Gallewey, John, from 1025 Devisadero st., to Ortmann Bldg., San Francisco.

Wilson, J. A., from 2673 California st., to Ortmann Bldg., San Francisco.

Leland, T. B. W., from 1910 Vallejo st., to Ortmann Bldg., San Francisco.

Clark, J. R., from 1809 Gough st., to Ortmann Bldg., San Francisco.

Berg, Adolph, from Lombard st. and Montgomery ave., to Ortmann Bldg., San Francisco.

Keeney, Jas. W., from 2220 Clay st., to Ortmann Bldg., San Francisco.

Shumate, Thos. Edw., from 2707 California st., to Ortmann Bldg., San Francisco.

Mix, P. A., from Towles, Cal., to Exeter, Cal.

Morrow, Howard, from 836 Turk st., to Butler Bldg., San Francisco.

Winter, Albert H., from Wilcox Bldg., to Wright & Callender Bldg., Los Angeles.

Pierce, Chas. W., from Collins Bldg., to Wright & Callender Bldg., Los Angeles.

Mayne, W. H., from Collins Bldg., to Wright & Callender Bldg., Los Angeles.

Schmoll, Emile, from 1059 O'Farrell st., to Union Square Bldg., San Francisco.

Zumwalt, Fred H., from Van Ness ave. and O'Farrell st., to Butler Bldg., San Francisco.

Huntington, Thos. W., from 2403 Fillmore st., to Union Square Bldg., San Francisco.

Tomlinson, R. F., from 1944 Fillmore st., to Union Square Bldg., San Francisco.

Bryant, Edgar R., from 1944 Fillmore st., to Union Square Bldg., San Francisco.

Hart, Morton E., from 103 Park ave., New York, to 246 Powell st. (Lincoln Bldg.), San Francisco.

Hopkins, Howard H., from 2373 Jackson st., to 1831 Polk st., San Francisco.

Abram, Henry, from 1800 Sutter st., to Butler Bldg., San Francisco.

Kelsey, Arthur L., from the H. W. Hellman Bldg., to the Wright & Callender Bldg., Los Angeles.

Mattison, Eugene G., from Stowell Bldg., Pasadena, to Chamber of Commerce Bldg., Pasadena.

Weeks, Alanson, from Post and Gough sts., to Union Square Bldg., San Francisco.

Bumgarner, G. M., from Escondido, to Imperial, Cal.

Brooks, Joseph Scofield, from 3773 Clay st., to Butler Bldg., San Francisco.

Pinkham, Chas. B., from 2703 Bush st., to Butler Bldg., San Francisco.

Kingwell, Jno. Joseph, from 1107 Franklin st., to Butler Bldg., San Francisco.

Tobriner, Oscar, from 1800 Sutter st., to Butler Bldg., San Francisco.

Smith, Larz A., from 1546 Ellis st., to Butler Bldg., San Francisco.

Baum, Maurice L., from 1007 Fillmore st., to Butler Bldg., San Francisco.

Dolman, Percival, from 2510 Bush st., to Butler Bldg., San Francisco.

Morton, Andrew W., from 775 Cole st., to Butler Bldg., San Francisco.

Schloss, Aaron, from 1301A Devisadero st., to Butler Bldg., San Francisco.

Fitzgibbon, Frank T., from 633½ Oak st., to Butler Bldg., San Francisco.

Peterson, A. C., from Union Bank Bldg., Oakland, to Butler Bldg., San Francisco.

Harding-Mason, Jno., from 1673 Sutter st., to Butler Bldg., San Francisco.

Spencer, Jno. Campbell, from 836 Turk st., to Butler Bldg., San Francisco.

Goss, Alice M., from 1792 Sutter st., to Butler Bldg., San Francisco.

Haskell, Carrie Goss, from 2984 Clay st., to Butler Bldg., San Francisco.

Glover, Mary E., from 2961 Buchanan st., to Butler Bldg., San Francisco.

Wells, Edith C., from 1800 Buchanan st., to Butler Bldg., San Francisco.

Tait, F. Dudley, from 1879 Sutter st., to Butler Bldg., San Francisco.

Jones, Phillips Mills, from 2210 Jackson st., to Butler Bldg., San Francisco.

Cooper, C. M., from 2411 Fillmore st., to Butler Bldg., San Francisco.

Brunn, Harold, from 2411 Fillmore st., to Butler Bldg., San Francisco.

Jellinck, E. O., from 943 Van Ness ave., to Butler Bldg., San Francisco.

Deaths.

San Francisco Co.—D'Arcy, W. N.

Reinstated.

Ross, R. O., Fresno, Cal.

New Members.

Oatman, H. C., Granger Blk., San Diego, Cal.

Lewis, J. Perry, 1067 6th st., San Diego, Cal.

Lewis, E. M., 1607 6th st., San Diego, Cal.

Winship, W. A., 930 Washington st., San Diego.

Corey, Martha D., La Jolla, Cal.

Ross, R. O., Fresno, Cal.

Mitchell, C. O., Laton, Cal.

Conran, P. J., 1548 McAllister st., San Francisco.

de Marville, H. B., 1424 Gough st., San Francisco.

Haderle, J. M., 628 Hayes st., San Francisco.

Spiro, H., 1325 Octavia st., San Francisco.

Stephens, Jno. Miller, Shreve Bldg., San Francisco.

Whitney, Jas. L., 1316 Sutter st., San Francisco.

Jully, Geo. H., 2504 Howard st., San Francisco.

Alexander, E. W., 16 Culloden Park, San Rafael, Cal.

Onesti, S. J., 1556 Green st., San Francisco.

Warren, H. S., 1012 Washington st., San Francisco.

Collins, Asa W., 3303 Sacramento st., San Francisco.

Buell, W. E., 301 Penn ave., San Francisco.

Crook, Emma L., 1814 San Bruno ave., San Francisco.

Brady, Jos. G., 1145 Guerrero st., San Francisco.

Quigley, Jno. M., 501 Cole st., San Francisco.

Molony, Jas. J., 20th and Valencia sts., San Francisco.

Means, Samuel W., 1166 O'Farrell st., San Francisco.